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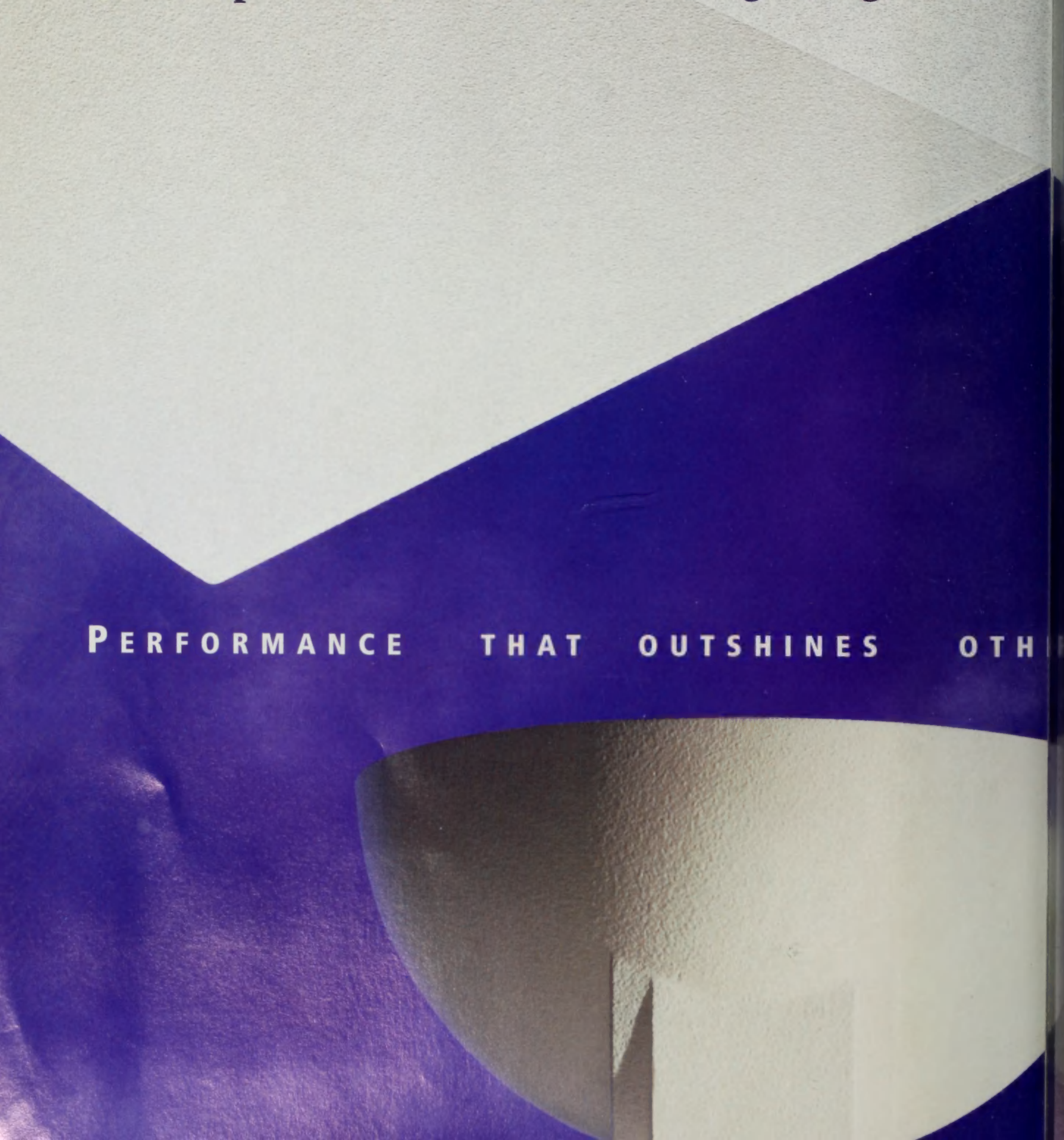

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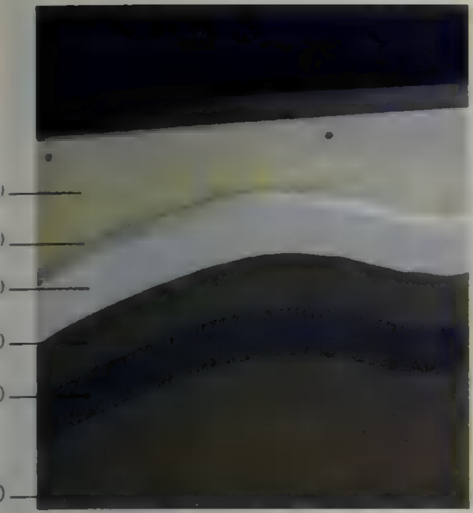

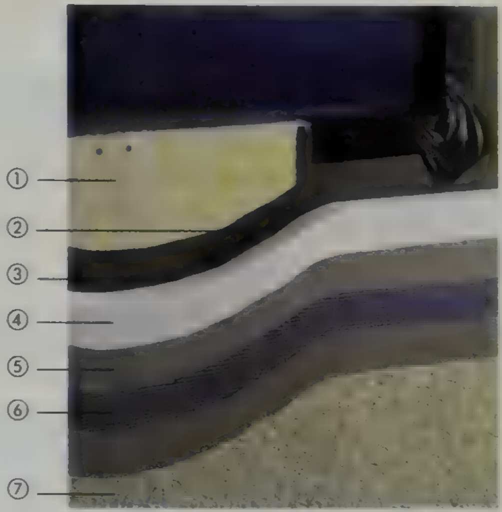

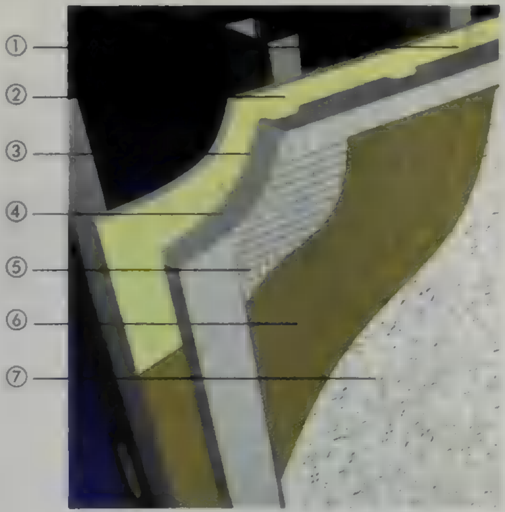

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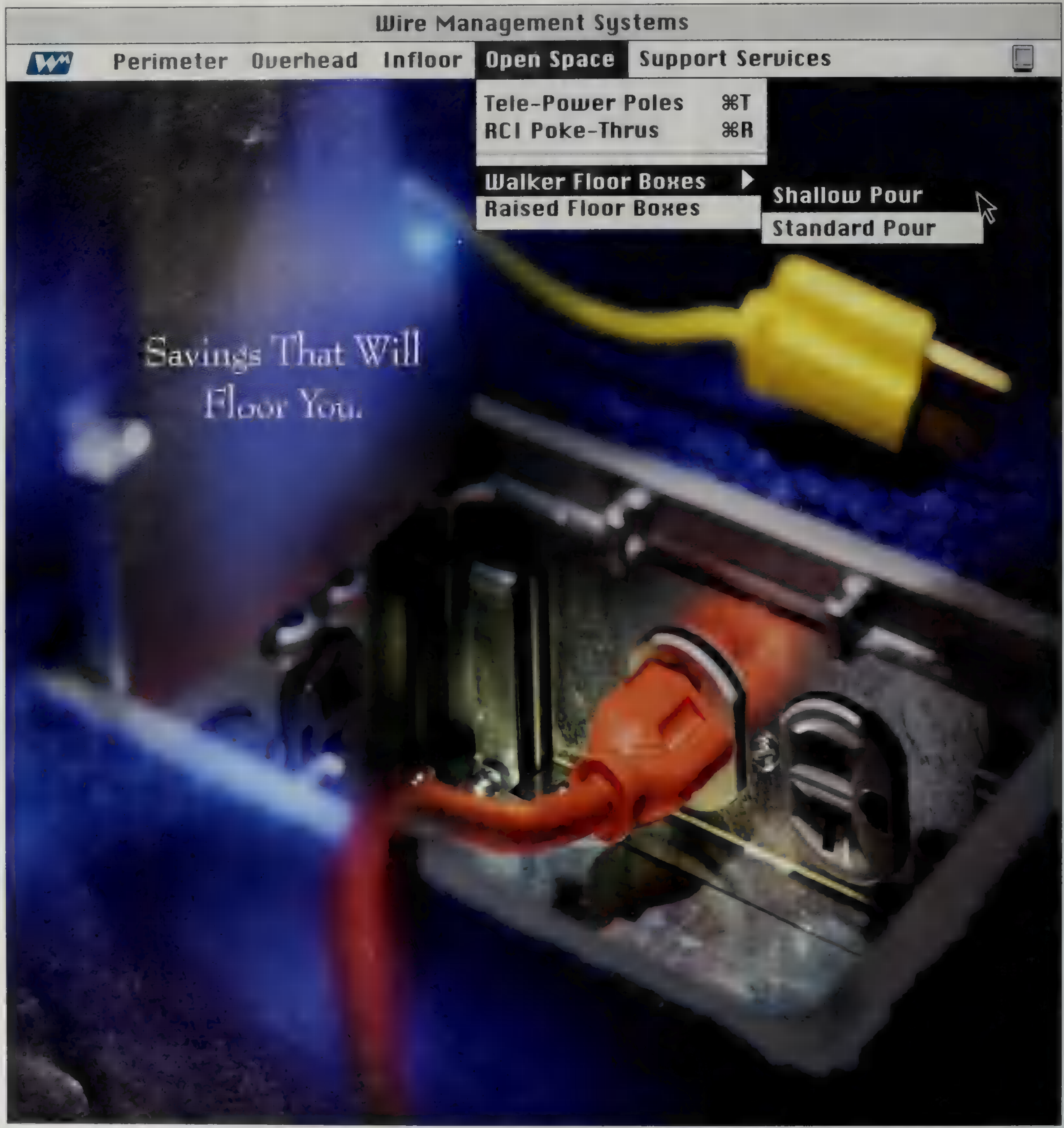

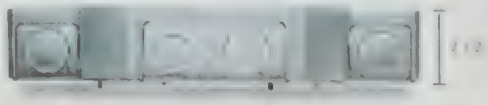

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BUILDING TYPES STUDY 741/Record Interiors

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Morris Lapidus is cool again. You may not like his style, but his influence cannot be denied. Read the interview with this American icon on page 92.

Continuing Education
This month, "Quiet Progress in Managing Environmental Toxins" (page 48) is eligible for AIA/ARCHITECTURAL RECORD Continuing Education learning credits. See page 133 for instructions.

Cover:
Don and Sylvia Shaw Salon & Spa
Dunwoody, Georgia
Scogin Elam & Bray, Architects
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Letters

Jeffersonian lament

I am disappointed and surprised that you have given nearly a quarter of the July feature section [ARCHITECTURAL RECORD, pages 72-79] to the Graduate School of Business at the University of Virginia.

I have been a regular reader of RECORD for over 35 years; throughout that time I have known your magazine to be the voice of intelligent conservatism in architecture, slow to see emerging trends, to criticize the prevailing establishments, or to take stands, perhaps, but nonetheless a thoughtful defender of the status quo and a voice for quality.

I find it incredible that you can state that, "Robert A. M. Stern Architects brings Thomas Jefferson's ideals to the University of Virginia's North Grounds." One of the main reasons that we admire Jefferson is that in most of his diverse endeavors—including architecture—he was unusually far-sighted and ahead of his time. Just as he accepted slavery, he designed in the eclectic vocabulary of his time and place, jumping from Georgian-Colonial to Palladian and early Roman. Yet throughout the design of the University of Virginia, and even more so Monticello, his real passion was finding new and better ways of doing things: creative innovations such as single wythe serpentine brick walls, advanced plumbing and ventilation, experimental horticulture. His excursions into the past were, for his time, almost avant garde.

Stern's design for the new Business School is more of a slap in the face to Jefferson than a statement of his ideals, a cynical parody of the mannerisms of the University of Virginia. In the hands of RECORD's erstwhile cartoonist, Alan Dunn, such mischief would have been humorous; here, it's a bad joke and then some.

Are the University's Board of Visitors and other lay powers behind the commissioning of this project too culturally backward to differentiate between good architecture and kitsch or, as your article points out, were they seduced by the idea of good "donor opportunities" by playing-to the notion of lowest common denominator design? They may not have known any better, but Robert Stern certainly should have.

And so should RECORD. By publishing this work in a non-critical fashion, you are in effect glorifying it and saying to today's architects that neo-Classical reproductions are fine, authenticity be damned, and that architecture is no more than fatuous decorations.

Walter Wagner [RECORD's editor-in-chief for many years] must be turning over in his grave.

G. MacKenzie Gordon
Gordon & Gordon
Lakeville, Connecticut

Continuing education

It's rare that anyone throws in an "extra" as valuable as your AIA/CES Continuing Education service. Reading the articles is enjoyable because you've set a learning challenge and offered a reward. Even if my professional focus is not on the subject matter, the insights and information they present can often be transposed into my own specialty.

Kenneth N. Dickerman
Healthcare Facility Consultants
Jacksonville, Florida

Calendar

September 25-29

"Frank Lloyd Wright's Influence on Architecture in the Northwest," to be held in Seattle, will feature authorities on FLW; comments from architects such as Frank Gehry; and tours of houses not usually open to the public. Sponsored by the FLW Building Conservancy. Call 312/663-1786, fax 312/663-1683 for details.

September 28-30

The Door and Hardware Institute's convention and exposition. Cincinnati. Call 703/222-2010 or fax 703/222-2410 for details.

October 16-20

Three exhibits and conferences, "Restoration/Chicago," the National Trust for Historic Preservation, and the Fall Antiques Show will run in conjunction at two Chicago locations: the Navy Pier and an adjacent exhibit hall for the Restoration and Antiques events, the Palmer House Hotel for the National Trust Conference. Call 508/664-8066, fax 508/664-5822 for further information.

October 26

ARCHITECTURAL RECORD and the Cooper-Hewitt National Design Museum will hold a symposium on "Creating the Modern House: Forty Years of RECORD HOUSES" in the auditorium of the McGraw-Hill Building, 1221 Avenue of the Americas, New York, N.Y. Four panel discussions will be featured: 1. lifestyles and residential design; 2. design ideas that started with RECORD HOUSES; 3. client-architect relations, and; 4. houses of the future. Participants will include Charles Gwathmey, Will Bruder, Ulrich Franzen, Jack Travis, Gisue Hariri, Leslie Gill, John Johansen, Robert Campbell, Suzanne Stephens, Thomas Hine, and Charles Gandee.

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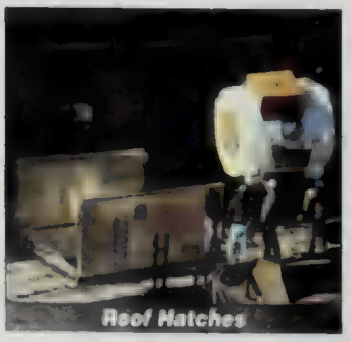
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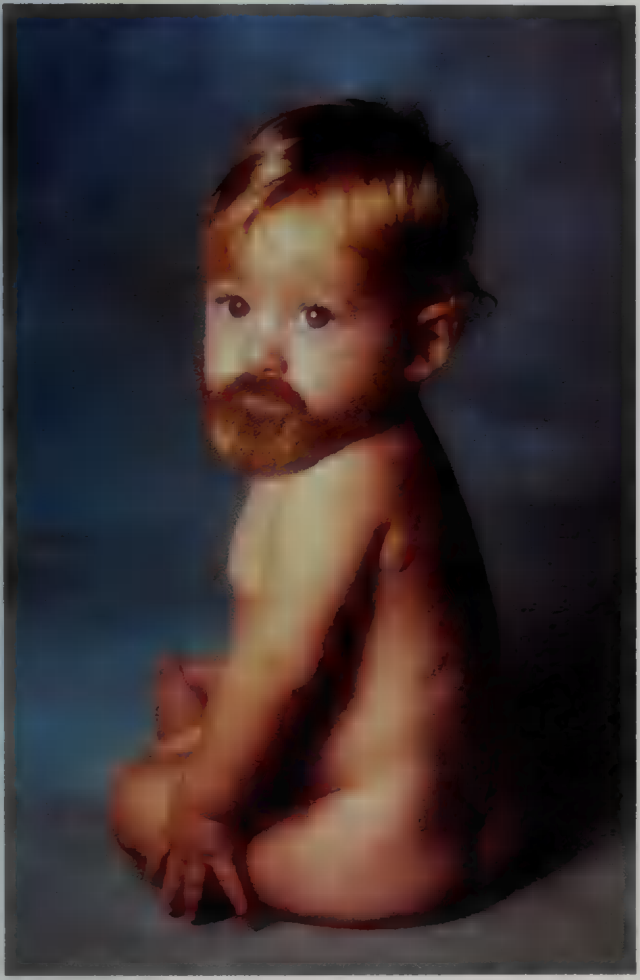

STOCKHOLM, SWEDEN. Much to the amazement of doctors at the Stockholm Medical Institute's Dept. of Endocrinology, young Sven Bjørk had already sprouted a full beard and handlebar moustache before turning six months old.

EL SEGUNDO, CA. A 2,000 square foot health club was surfaced with 100% real wood, yet the grain and color matched perfectly throughout the facility and the fabrication generated virtually zero waste. This unique wood surfacing material, currently available in 36 colors and patterns, is marketed by the world leader in decorative laminates, Formica Corporation, and manufactured by the world leader in veneers, ALPI. For samples or more information call 1-800-FORMICA.

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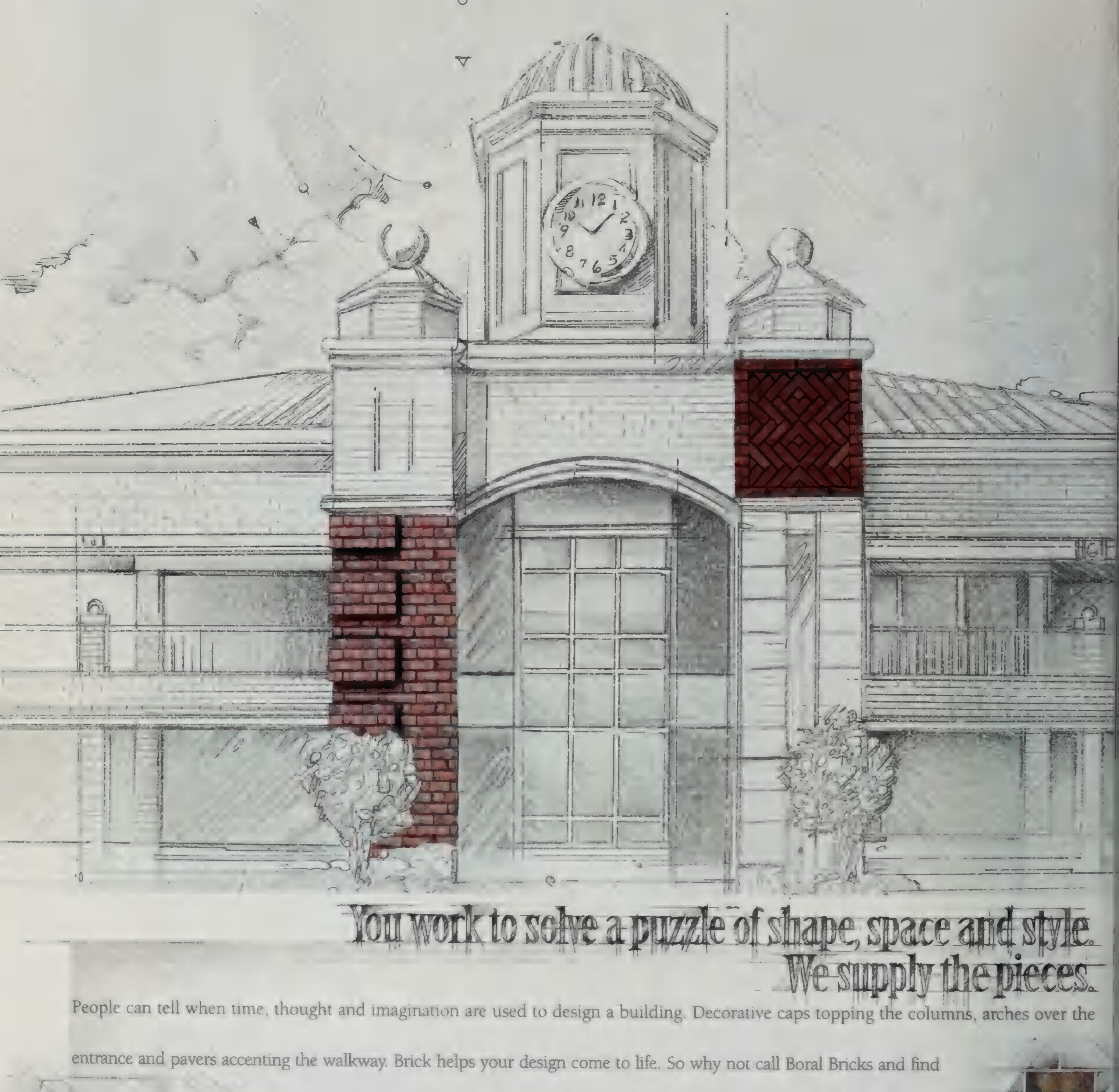

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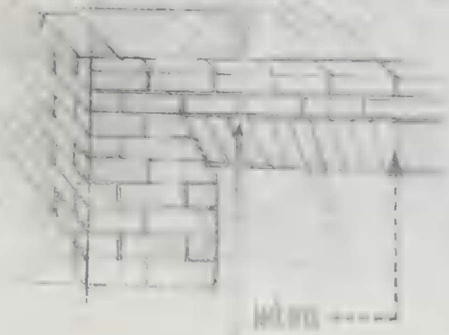

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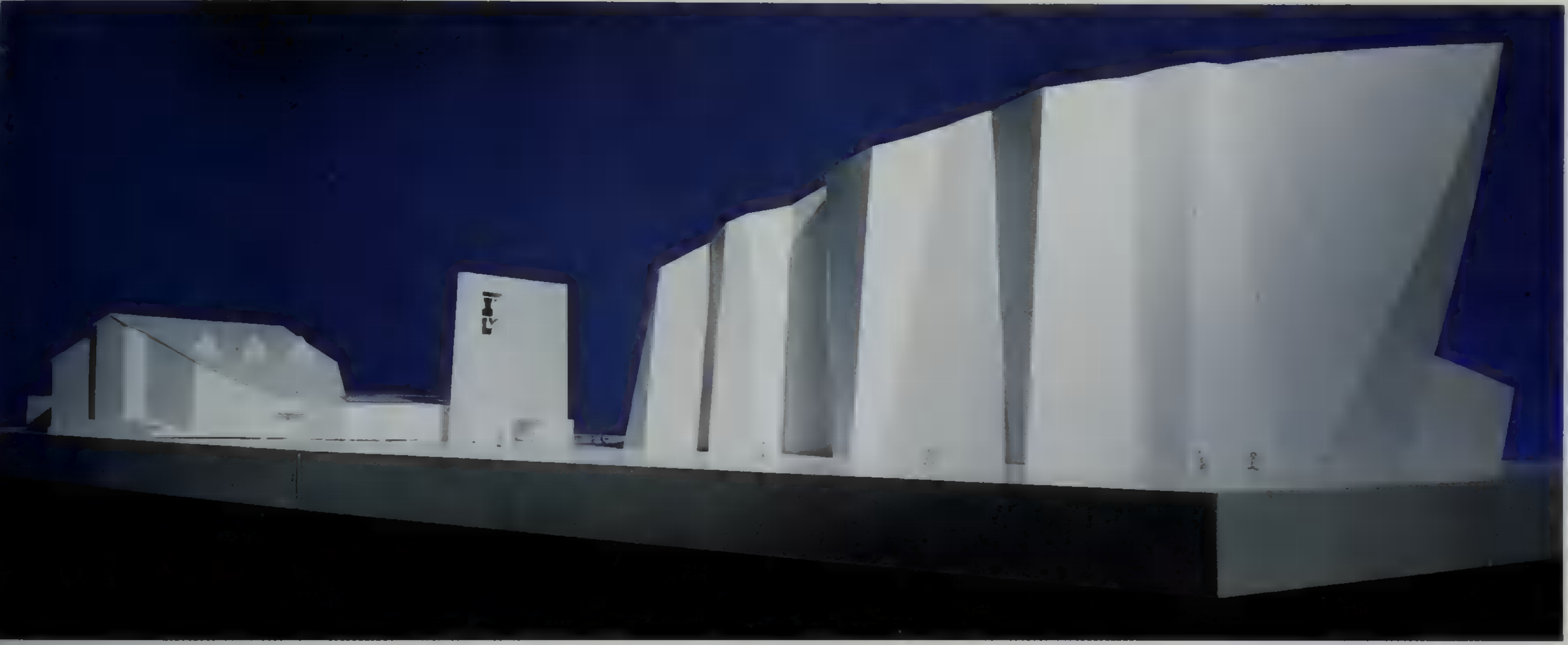
Dallas

Philip Johnson Unveils Design for Gay and Lesbian Church



© Michael Rogol

After much ado about Philip Johnson's 90th irthday this summer, the nonagenarian's rm, Johnson, Ritchie & Fiore of New York City, unveiled its design for the Cathedral of Hope in Dallas. The $20-million project for what is said to be the world's largest church serving the gay and lesbian community is a concrete structure, following in the Zaha Hadid vein of the recent visitors' center on Johnson's Connecticut estate. The 30,250-sq-ft project includes a new 2,500-seat sanctuary, the renovation of an existing building, and a new cloister connecting the two structures. Johnson, who is also the architect of the Crystal Cathedral in California, has described the project as "the crowning jewel in my lifetime of work." A fund-raising campaign is underway. *Abby Bussel*

Washington, D.C.

National Council Repeals "Experienced Architect" Status

n a move that has stirred much debate, the National Council of Architectural Registraion Boards (NCARB) repealed its "broadly xperienced architect" provision that xempted practitioners from the U.S. or Canada who could demonstrate satisfaction f the NCARB's education standard through xtended professional practice. Approved by elegates to the organization's 77th annual onference this summer, the measure was eveloped to "strengthen" NCARB's two-ear-old education requirement, which states hat all U.S. applicants must have a degree in architecture from a program accredited by the National Architectural Accrediting Board beginning July 1, 2000. Delegates, however, did not adopt the measure for architects with a professional degree acquired from an institution outside the U.S. and Canada; these architects can request an independent evaluation of their educational qualifications to determine satisfaction of NCARB's standards. Several other changes were passed at the conference, including the elimination of architect references from the evaluation process for everyone but sole proprietors. ■

New York

Staff Satisfaction Will Determine Fee

HLW International of New York City has agreed to an unusual fee structure for their recently completed Ciba-Geigy Additives Laboratory Facility, a design-build project in Tarrytown: the architect's contract stipulates that their profits be based on user satisfaction and completion of the project on time and on budget. HLW beat the clock by five months, completing the project $3.3-million under budget. This fall, Ciba employees will fill out a questionnaire evaluating soundproofing, lighting, design, spatial organization, construction quality, and odor control. ■

News Continues

News

Briefs

San Diego library goes to Rob Quigley
The San Diego City Council has approved selection of hometown architect Rob Wellington Quigley with Simon Martin-Vegue Winkelstein Moris and Tucker, Sadler & Associates as designer of the city's new main library, following the recommendation of a citizens' advisory committee. Runners-up were: William P. Bruder Architect; Cesar Pelli & Associates; and Moshe Safdie Associates.

Pratt news
Architect Thomas Hanrahan has been appointed dean of the school of architecture at Pratt Institute. The school's Higgins Hall sustained $10-million in damage in a fire of unknown origin on July 21. The 1868 Brooklyn landmark was being renovated and restored at the time of the fire.

Gaudi's Casa Mila restored
Ten years after the project began, Antoni Gaudi's Casa Mila in Barcelona has been restored. Popularly known as La Pedrera, the building is now a cultural center called the Caixa de Catalunya.

I.D. Design Review winners
Hodgetts + Fung Design Associates, Santa Monica, has won Best of Category for Environments in *I.D.'s* 42nd annual Design Review (July/August 1996) for "Sun Power: No More Daisy" exhibition in Germany. Other winners include Paola Antonelli, curator of "Mutant Materials" at the Museum of Modern Art in New York; and CORE of Washington, D.C., for the National Minority AIDS Council in Washington, D.C.

Obituaries

- Myron Goldsmith, architect and engineer, died July 15 at 77. Known for his McMath-Pierce Solar Telescope Facility at Kitt Peak in Arizona, Goldsmith studied under Mies van der Rohe and Pier Luigi Nervi and worked for SOM from 1955 to 1983.
- British landscape architect Sir Geoffrey Jellicoe died July 17 at 95. Trained as an architect, Jellicoe designed public and private gardens and landscapes, including the John F. Kennedy Memorial in England.
- Jed Johnson, a self-taught interior designer based in New York, was killed in the explosion of TWA Flight 800 on July 17. He was 47. Johnson, whose first project was Andy Warhol's residence, established Johnson Wanzenberg with architect Alan Wanzenberg in the early 1980s. ■

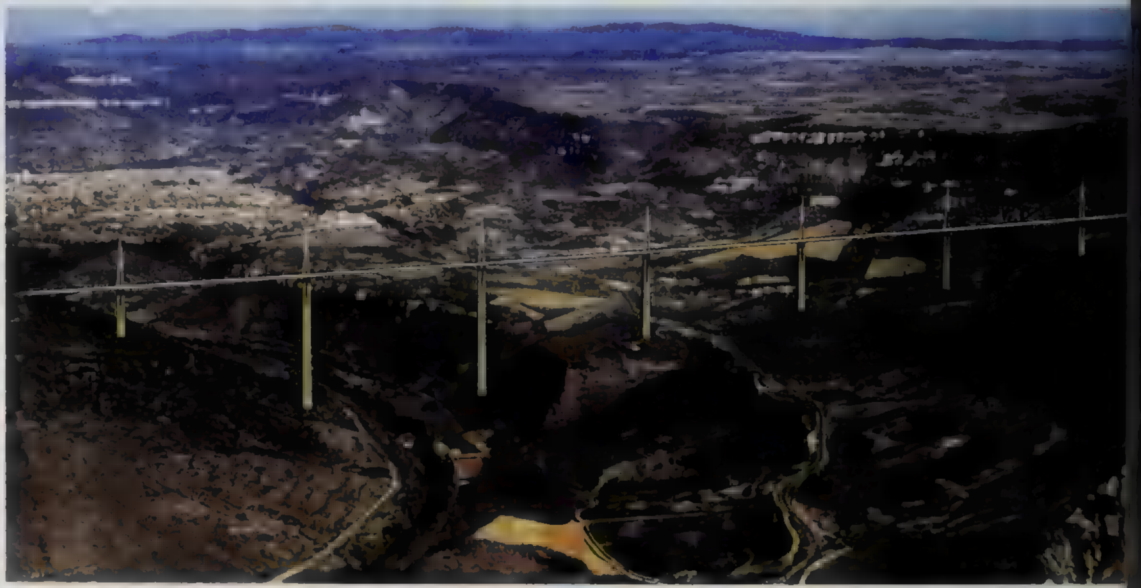
Barcelona

Huge Size of UIA Congress Causes Capacity Problems

With an attendance of 9,790 architects from 97 countries, including 4,043 students, the 19th Union of International Architects Congress held in Barcelona, Spain, this summer became the largest recorded gathering of architects in history. Addressing the theme "Present and Futures: Architecture in Cities," participants set out to debate the metropolitan condition at the threshold of the 21st century. The proceedings, however, mirrored the pending crisis in the profession: incongruencies between intentions and reality were evident not only in the architects' philosophizing, but in the logistics of the conference itself. Faced with capacity problems, organizers moved the first day's debates from three small theaters to an Olympic stadium, where the main debates became quick, MTV-like spots. Fortunately, some of the workshops were more substantive. Awards included the UIA Gold Medal t Rafael Moneo of Spain; the Auguste Perret Award for applied technology to Thomas Herzog of Germany; and the Benedictus Award to William P. Bruder Architect for the Phoenix Central Library. *Kelly Shannon*

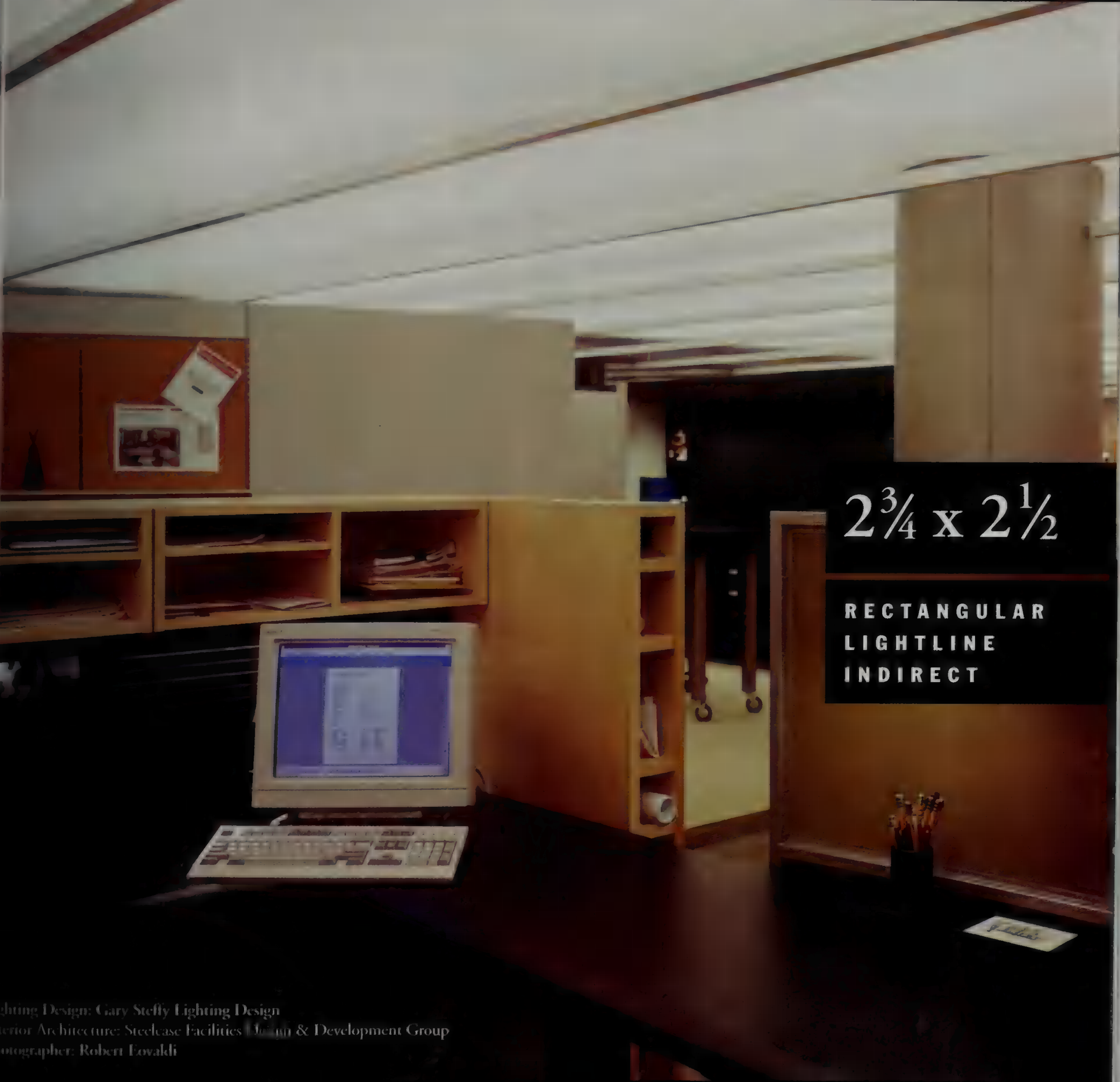
France

Foster to Plan Bridge Over Tarn



Foster & Partners of London have won a limited competition to design a 2.5-kilometer-long road bridge over the Tarn River in the South of France. The $280-million bridge will cross the Tarn Valley west of Millau in the Aveyron. At 1,060 ft, its largest column will be 99 feet taller than the Eiffel Tower, according to a Reuters report. The cable-stay structure will be divided into seven sections, each spanning 350 meters. To accommodate the concrete deck's expansion and contraction, each column splits in two below the roa deck to become more flexible. The cables are connected to A-frame masts and organized i a fan configuration. The project, funded by the French Roads Department, is to be completed in 2001. Foster's team includes Frenc engineers Sogelerg, EEG, and SERF. ■

News Continues



ghting Design: Gary Steffy Lighting Design
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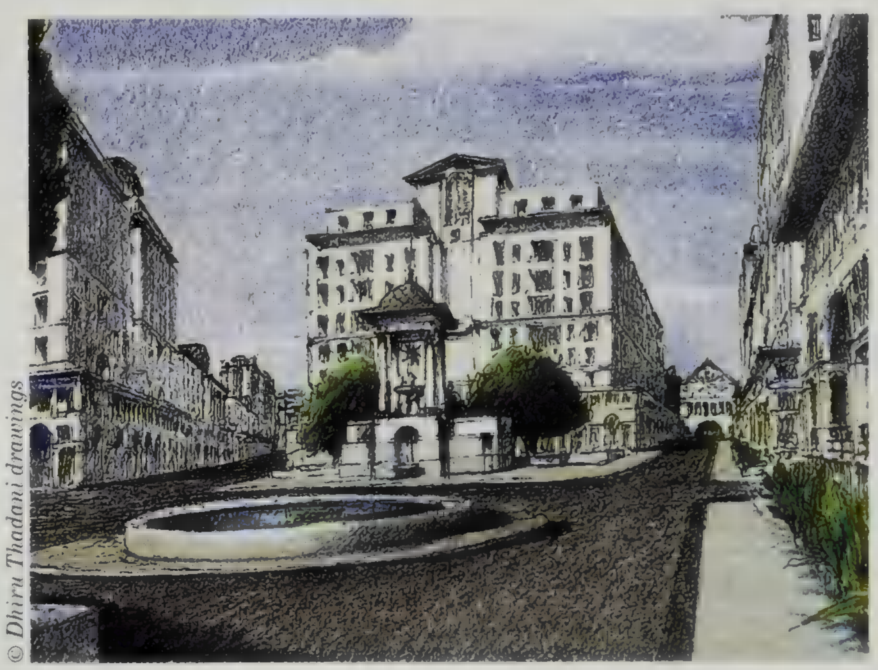
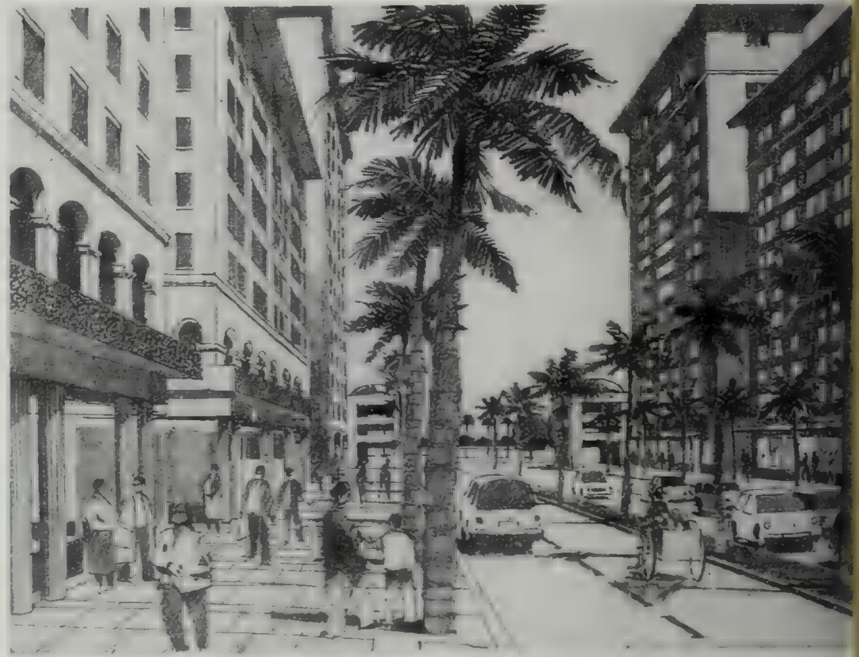
India

Thadani Hetzel to Design New Town for 25,000 People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To house India's growing middle class of computer-industry employees, developers India Builders Corp., ETA, and Dynamix Group have commissioned Thadani Hetzel Partnership of Washington, D.C., and Bombay to design the master plan for a $250-million new town on the edge of Bangalore, a center of India's computer boom. Called Platinum City, the 90-acre site will house 25,000 people and include 4,500 residences, 500,000 sq ft of offices, 175,000 sq ft of retail, plus schools, and community centers. With Andres Duany and Elizabeth Plater-Zyberk Architects & Town Planners as consultants, the architects designed a master plan focused on making streets and public spaces. Completion is a decade away. High-tech computer development is a fast-growing industry in India, as American computer giants take advantage of local engineering expertise and relatively inexpensive living costs. ■

Technology

Curtain Wall As Power Plant

Kawneer Co., Inc., of Norcross, Ga., announced that it will be offering as a standardized assembly the 1600 PowerWall, which places solar-electric modules (PV cells) into several styles of the company's widely used aluminum curtain-wall framing systems. The polycrystalline cells convert sunlight energy directly into electricity without using fuel, and were designed specifically for wall and sloped-glazing installations by Solarex, a joint venture of Amoco and Enron Corp. (both also in the oil business).

Kawneer anticipates that replacing opaque infill with PV panels in a facade will lower the net energy consumption of a building, as well as cut utility bills by reducing power use during premium-cost, peak-demand hours. Curtain-wall panels come in both AC and DC versions. *Joan Blatterman*

New York

A Small Project With Major Impact

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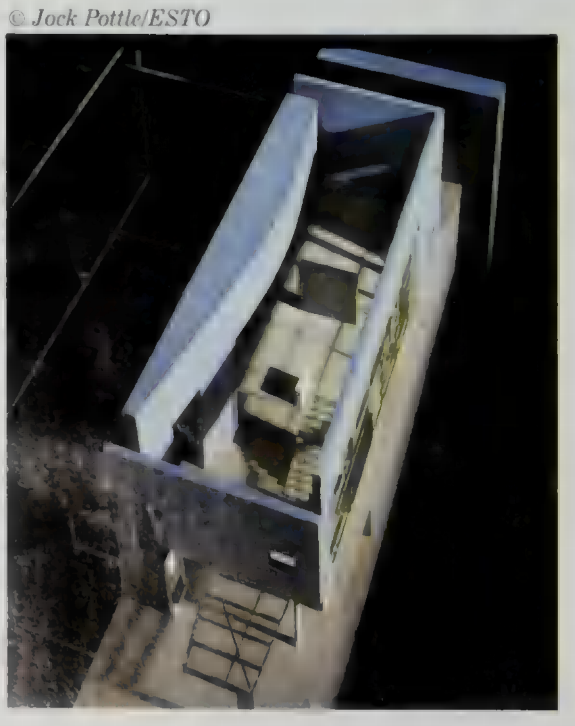

With their 3,000-sq-ft entrance addition to the Red Hook Community Center, Thomas Hanrahan & Victoria Meyers Architects of New York have parlayed a small project into a significant urban improvement for the residents of the Red Hook section of Brooklyn, a working class neighborhood. A newly landscaped area will mark the entrance to the community center and an adjacent daycare facility and act as a gateway to the Red Hook Houses, a 1939 WPA housing complex currently accessed by a dark and unsafe route. The architects, who are working in conjunction with Castro-Blanco Piscioneri & Associates, will remove and replace the community center's north façade with operable panels to open the existing auditorium to a planned outdoor theater. The project, commissioned by the New York City Housing Authority, is to be completed by September 1997. ■

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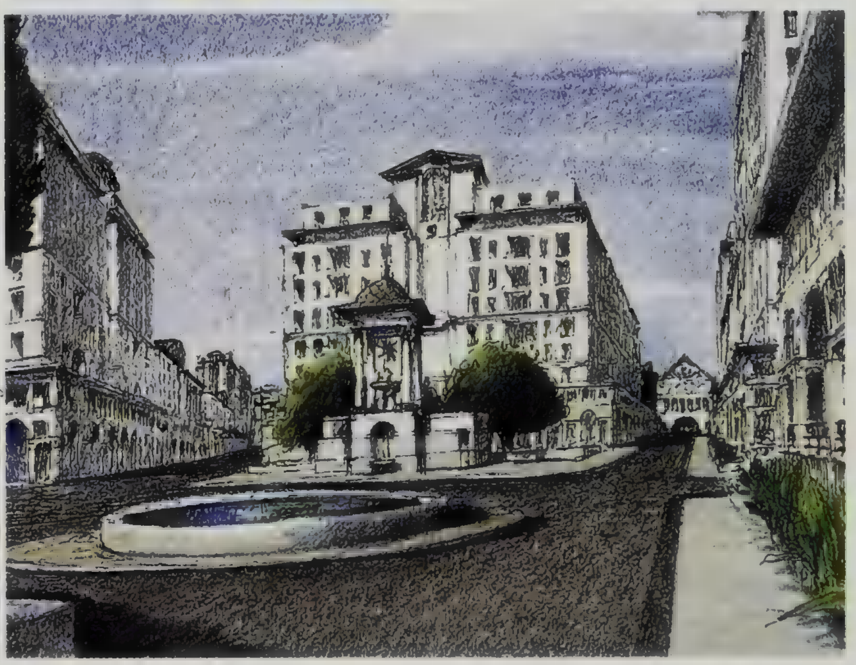
India

Thadani Hetzel to Design New Town for 25,000 People



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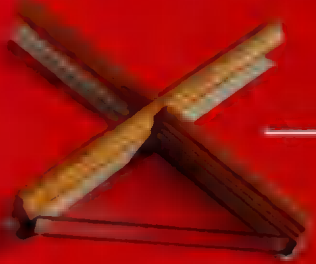

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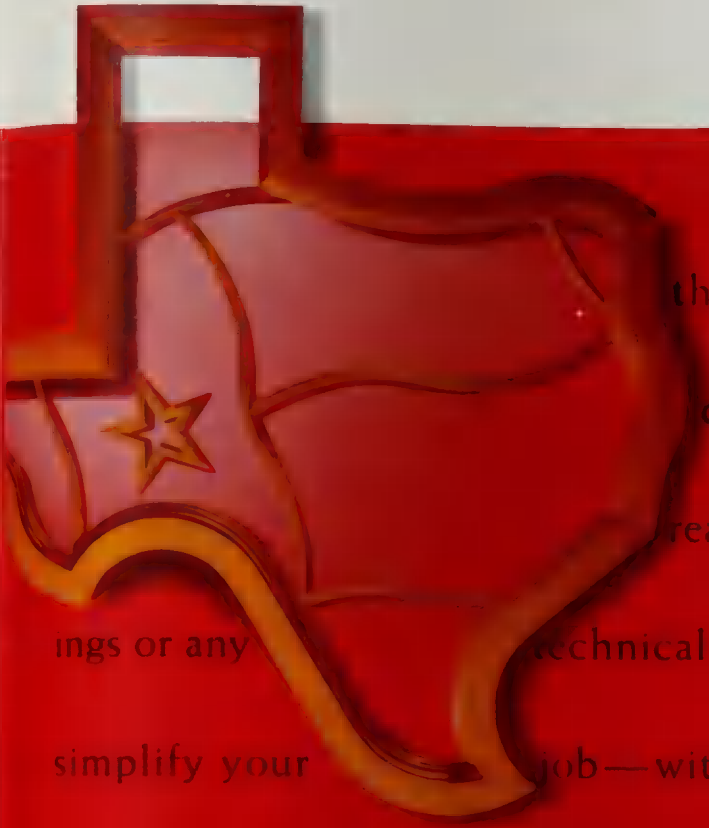

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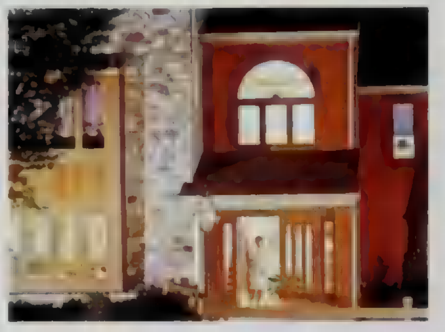

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How Money and Codes Shape Skyscrapers

Form Follows Finance: Skyscrapers and Skylines in New York and Chicago, *by Carol Willis. New York: Princeton Architectural Press, 1995, 224 pages, $35 (cloth), $23 (paper).*

Reviewed by Laurie Beckelman

Lewis Mumford wrote that cities were created as "a means of bringing heaven down on earth." They are a "symbol of the possible." In *Form Follows Finance*, architectural historian Carol Willis shows how skyscraper developers in two metropolises have combined optimism with realism, a faith in finding form for heaven on earth with a capitalist's devotion to the bottom line.

Rather than tracing the evolution of styles in the history of the skyscraper, as too many other books on the subject already have done, this readable work focuses on economics and municipal codes as the main determinants of form. Willis, who is an adjunct professor of urban studies at Columbia College and the driving force behind the Skyscraper Museum in Manhattan, which she hopes to kick off this fall, departs from what one would consider a more holistic approach to skyscraper history.

She states at the beginning of her book that it is not a traditional architectural history and doesn't dwell on "schools," style, or structure. According to Willis, the most important determinants of skyscraper form are the real-estate formulas and the modifications developers have adopted to respond to local conditions, municipal regulations, zoning, and each city's street grid. She argues that profit and program are critical factors in a building type dedicated to generating rents and that economic considerations govern design decisions.

The first half of the book focuses on what Willis calls "vernaculars of capitalism," while the second homes in on the economics of the real-estate speculation that shaped the skylines of New York and Chicago. She notes the different nature of real-estate development in the two cities—New York's being aggressive and speculative, while Chicago's being more conservative and measured.

© Courtesy of the Skyscraper Museum

Postcard view of the Empire State Building

Willis gives detailed examples of these differences—showing how New York's free-wheeling approach and Chicago's more regulated system influenced skyscraper design. She devotes many pages to the Empire State Building and shows how it is truly the best example of form following finance. Willis's common-sense approach to the creation of these commercial buildings is persuasive. Yet I yearned to read more about the esthetic, historical, and social factors so inseparable from the process of building.

Form Follows Finance includes a wealth of old photographs, postcards, floor plans, and historic maps that provide the opportunity to understand the physical and historic contexts in which these buildings were placed. And by explaining the economic forces that help shape skyscrapers, Willis shows us the capitalist context in which they grew. ■

Laurie Beckelman is vice president of the World Monuments Fund and a former chair of the N.Y. Landmarks Preservation Commission.

Reconstructing Architecture for the 21st Century: An Inquiry into the Architect's World, *by Anthony Jackson. Toronto: University of Toronto Press, 1995, 224 pages, $50 (cloth), $18 (paper).*

Reviewed by M. Gordon Brown

The first sentence of this readable, polemical, and ultimately persuasive book expresses a conviction that many in the architectural profession hold: "There is something very wrong with architecture as it is practiced today."

The "something very wrong" that Anthony Jackson, a professor of architecture at the Technical University of Nova Scotia, writes about is that architecture has created a public largely indifferent to what architects produce. He points out that even the word "architecture" has become part of the problem: it conveys images of an elite group of artists no longer suited to play a major role in a democratic market society.

Jackson frames his critique of architectural practice by examining the culture of architects, showing how the myths of architecture have pulled the profession away from the culture of society at large. "It is reasonable that buildings should reflect the values of at least the majority of the people who inhabit them," states Jackson. "If they do not, there is a conflict between the public outlook and its constructed environment."

The problem, according to Jackson, started not with Deconstructivism, nor Postmodernism, nor Modernism. The author traces the roots of the current dilemma back to antiquity when myths of the architect's role as symbol- and form-maker began. It was with these myths that "Vitruvius succeeded in divorcing building from the ordinary world and elevating it to the metaphysical realm." Jackson shows that what is increasingly missing in what architects design is an *affective* connection with the everyday interests and values of the people and communities their buildings are supposed to serve. ■

M. Gordon Brown writes about architecture for the Denver Business Journal *and is a principal of Space Analytics in Denver.*

Books continues

Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture, *by Kenneth Frampton. Cambridge: MIT Press, 1995, 421 pages, $50.*

Reviewed by Lester Paul Korzilius

Since the late 19th century, the manipulation of space has become an increasingly dominant issue in architectural thought. In his latest book, Kenneth Frampton seeks to redress this imbalance by focusing on the art of construction—or the "tectonic."

Frampton, a professor of architecture at Columbia University, earned his high reputation with books such as *Modern Architecture: A Critical History (1980)*, *Modern Architecture: 1851-1919 (1981)*, and *Modern Architecture: 1920-1945 (1983)*, the latter two produced with Yukio Futagawa. In *Studies in Tectonic Culture*, Frampton elaborates on ideas first presented in these books.

The book begins with background on the evolution of tectonic form and examines the work of Schinkel, Labrouste, Pugin, and others. Throughout the book, Frampton refers to the theories of Viollet-le-Duc and Gottfried Semper. In his discussion of Viollet-le-Duc, Frampton shows how the 19th-century Frenchman sought to establish architecture as an art of construction based on logic, economy, and craft production.

The heart of the book devotes one chapter each to the work of six architects: Frank Lloyd Wright, Auguste Perret, Ludwig Mies van der Rohe, Louis Kahn, Jørn Utzon, and Carlo Scarpa. As he did in *Modern Architecture: A Critical History,* Frampton uses the work of each architect as the basis for a themed discussion. The inclusion of Utzon and Scarpa in this book gives added breadth since neither was mentioned in the 1980 book. Indeed, the chapters on Utzon, Scarpa, and Perret are particularly strong.

The new book is most persuasive when it combines an analysis of a work's underlying principles with its tectonic manifestation. ■

Lester Paul Korzilius is a principal of Lester Paul Korzilius Architects in New York City.

Briefly Noted

Intelligent Glass Facades: Material, Practice, Design, *by Andrea Compagno. Basel: Birkhäuser, 1995, 128 pages, $58.*
Anyone seeking the latest methods for designing glazing systems that take maximum advantage of daylight and natural ventilation, while saving energy, would be wise to pick up this up-to-date primer. It ranges from the constituents of recently developed glass products and selectively reflecting glazings and coatings, to laminated glass, integral photovoltaics, external and internal shading devices, and multiple-skin facades. While much of the information and many of the book's innovative examples have been published in journals (many were in "The Intelligent Exterior," RECORD, October, 1995, pages 70-85, for example), the book usefully places all the innovative facade criteria together in one readily navigated volume.
James S. Russell

Twentieth-Century Building Materials: History and Conservation, *edited by Thomas C. Jester. New York: McGraw-Hill, 1995, 352 pages, $50.*
A comprehensive reference, this book includes information on the history, manufacturing process, uses, and conservation of dozens of modern building materials.

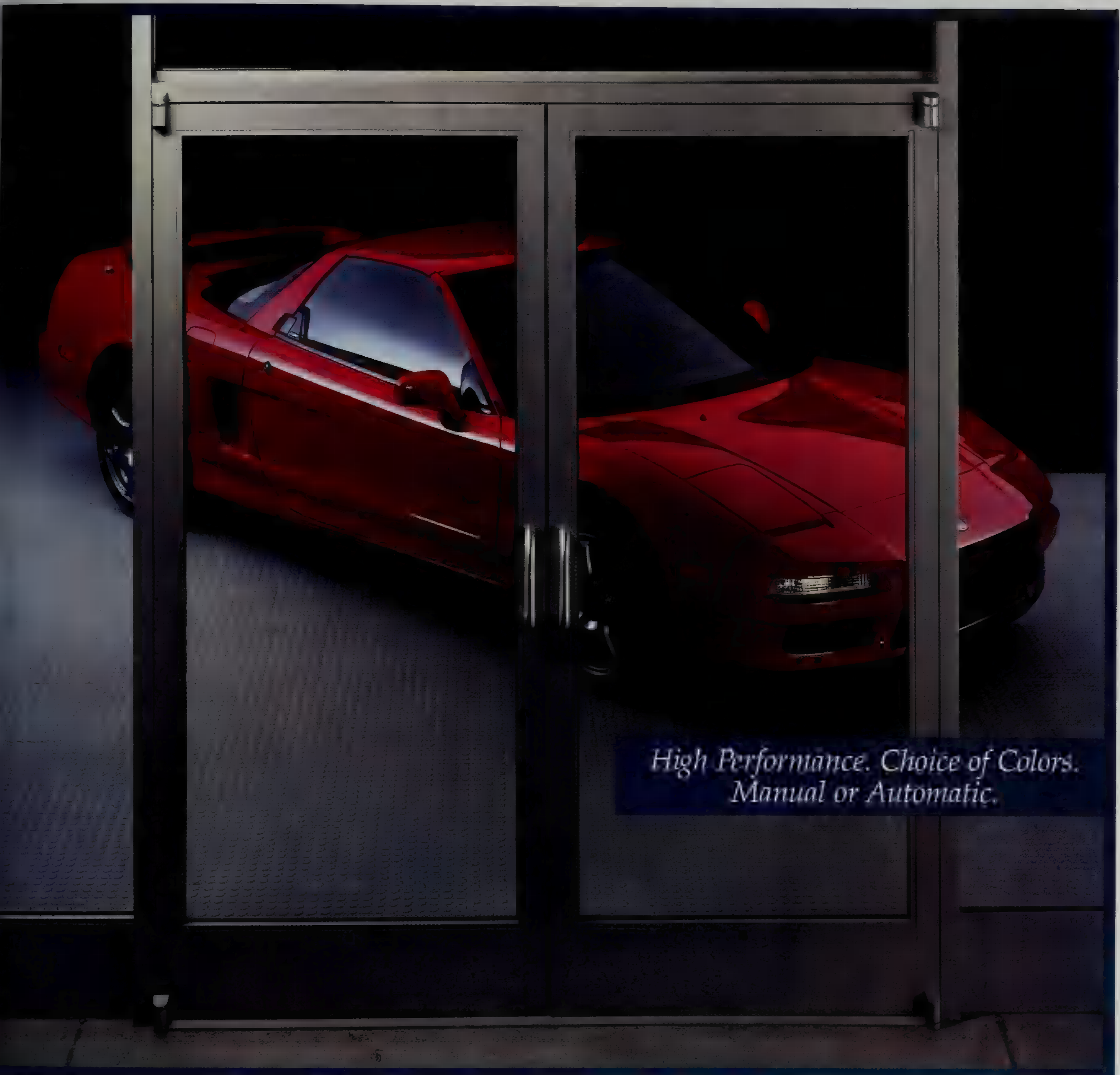
Nightlands: Nordic Building, *by Christian Norberg-Schulz, translated by Thomas McQuillan. Cambridge: MIT, 1996, 230 pages, $40.*
Neither a history of Scandinavian architecture nor a catalog of landmark structures, this book tries to answer the question: What is Nordic building? By examining the architecture of four countries—Denmark, Sweden, Norway, and Finland—and then comparing it with the architecture of the Mediterranean (the "South"), Norberg-Schulz paints a fascinating picture in which climate, geography, culture, and the angle of the sun are some of the factors separating and linking these countries to each other. A professor at the Oslo School of Architecture who has lived in Rome, Norberg-Schulz uses themes such as "the natural," "the domestic," "the universal," and "the regional" to discuss the similarities and differences within Nordic building and between the architecture of the North and that of the South.
Clifford A. Pearson

Aalto's Villa Mairea (below) in Noormarkku, Finland, dates from 1931-1941.

Alvar Aalto, *by Richard Weston. London: Phaidon (distributed in U.S. by Chronicle), 1995, 240 pages, $75.*
This large-format book offers an excellent overview of the great Finnish architect's work. Although Weston doesn't get into the kind of detail that Göran Schildt did in his three-volume biography of Aalto (published by Rizzoli from the late 1970s to 1991), he sets the context—both cultural and historical—in which his subject worked. Chapters are organized thematically covering such topics as the architect's "classical foundations," his town halls and campus projects, and his places of worship. New color photos, lots of drawings, and heavy-stock paper help convey the richness of Aalto's architecture.

Achtung Architektur!: Image and Phantasm in Contemporary Austrian Architecture, *by Eeva-Liisa Pelkonen. Cambridge: MIT, 1996, 195 pages, $40.*
An enthusiastic cheerleader of the avant-garde, Eeva-Liisa Pelkonen discusses the ideas and practices behind the work of Austria's radical architects. Pelkonen, who teaches architectural design and theory at Yale and who immersed herself in the Marxist-Freudian art scene by collaborating with architect Volker Giencke in Graz, Austria, for four years, examines the work of Giencke, COOP Himmelblau, Günther Domenig, Klaus Kada, Helmut Richter, and others. Her approach sacrifices critical distance for immediacy.

The Lewis Mumford Reader, *edited by Donald L. Miller. Athens, GA: University of Georgia, 1995, 392 pages, $20 (paper).*
Twenty-eight essays by the great urban critic are neatly packed in this single volume. ■



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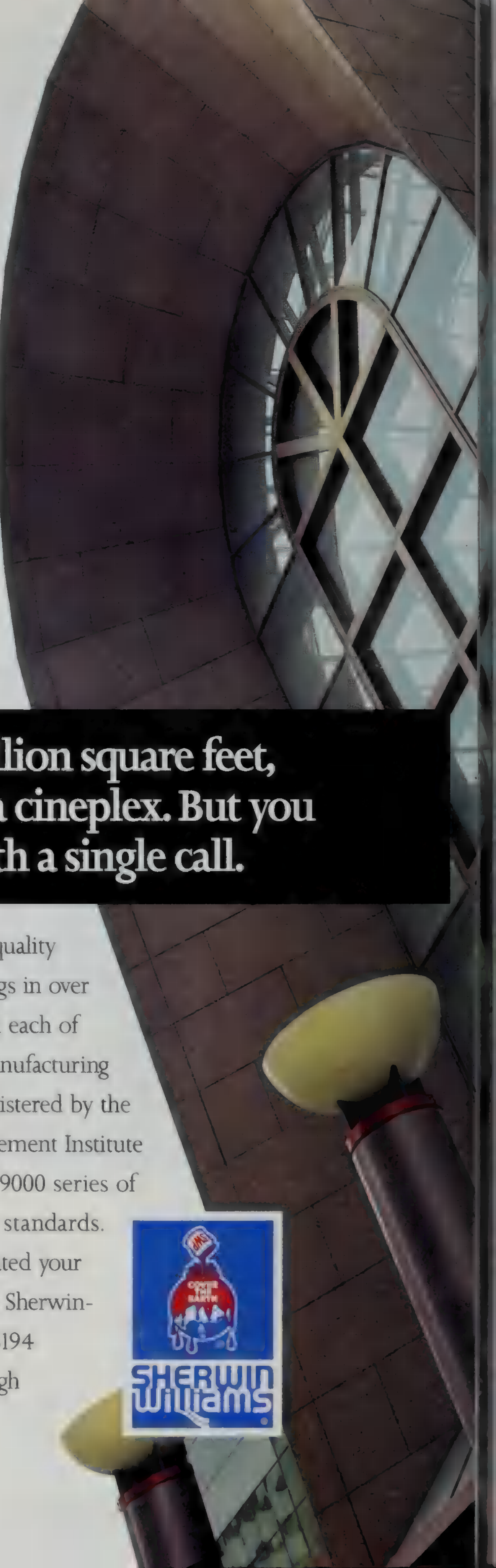

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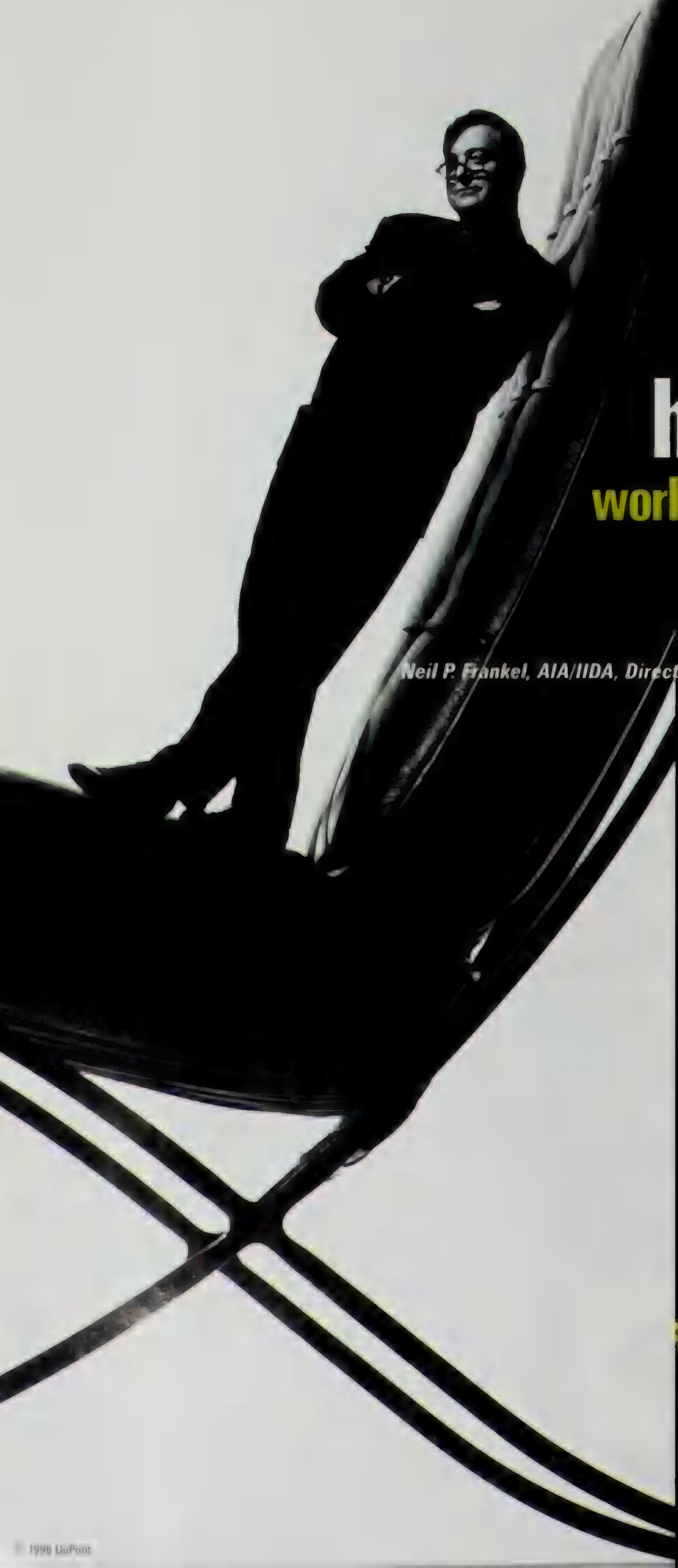

To Neil Frankel, how you view the world depends on where you sit.

Neil P. Frankel, AIA/IIDA, Director of Interiors, Skidmore, Owings & Merrill LLP, Chicago

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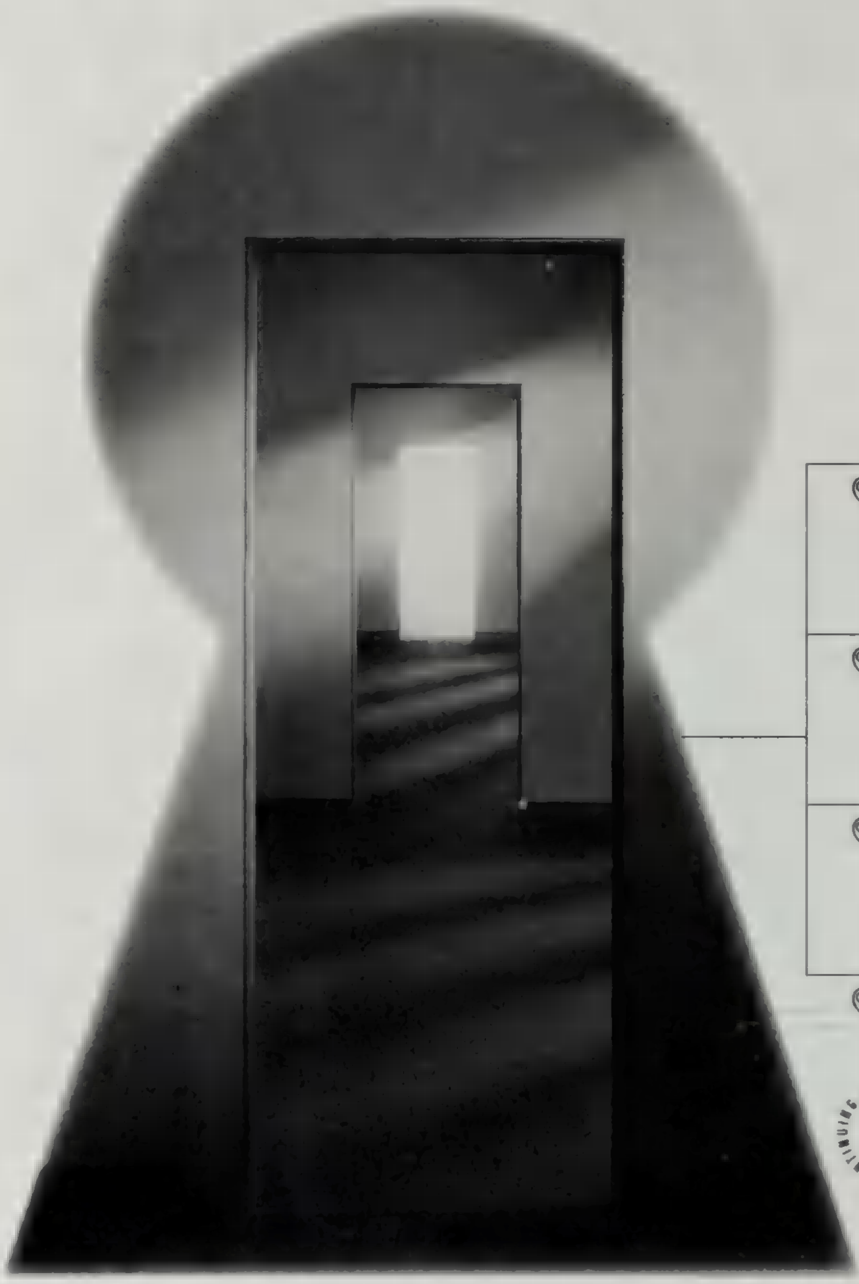AUTODESK TRAINING CENTER

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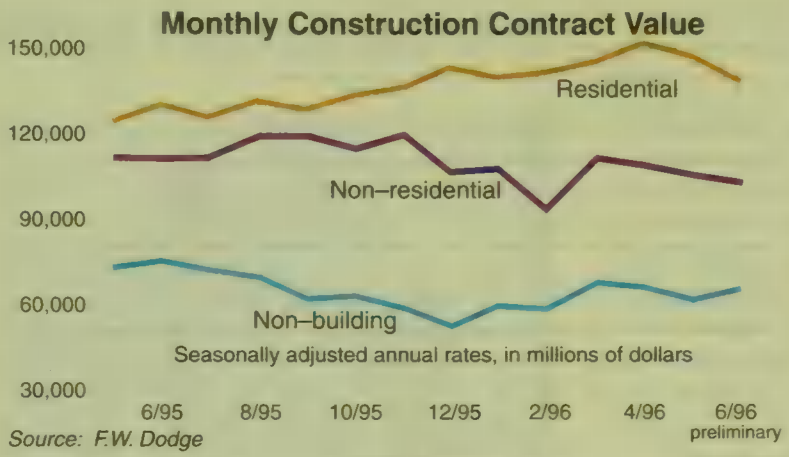
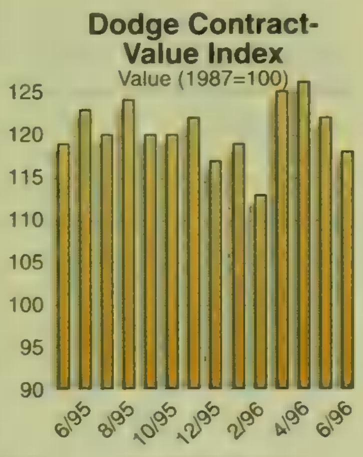
Indicators

Higher interest rates take their toll

The torrid residential market finally reacted to higher interest rates as June volume declined 7 percent. Non-residential construction also slipped 3 percent; store construction retreated from near-record levels, and public building volume also dipped. Hotels have been a bright spot in 1996, however. In the January-to-June period, reports Dodge, unadjusted total construction rose 4 percent over the same period last year, driven mostly by residential building. Non-residential construction was down 6 percent. ■

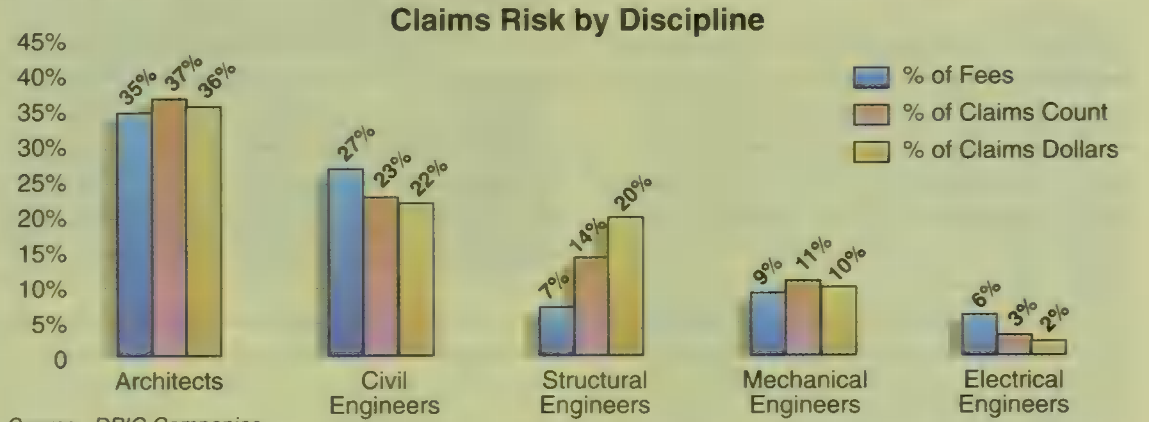

Monthly Construction Contract Value

Source: F.W. Dodge


Dodge Contract-Value Index

Architecture not a liability-claim magnet

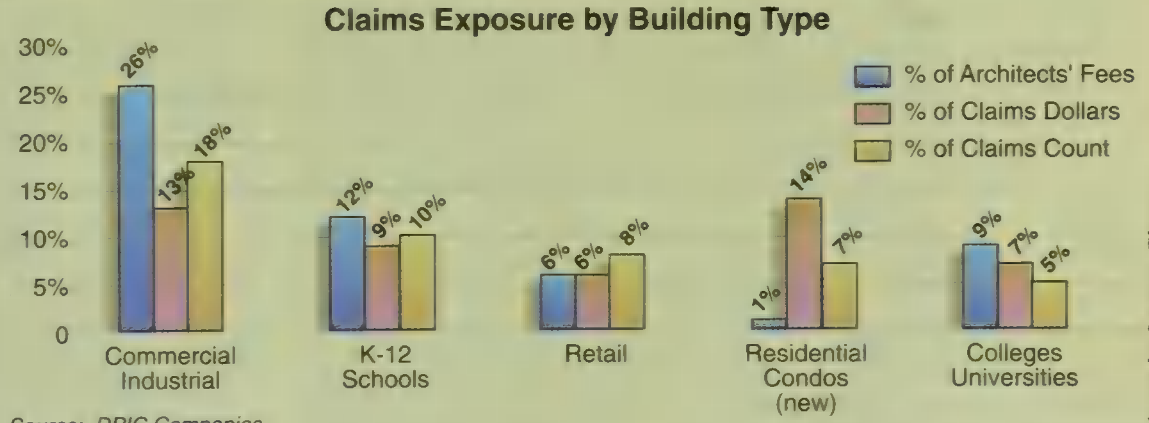
Comparing claims to fees, structural engineers are at highest liability risk among construction professionals. Architects' and mechanical engineers' risk is "above average," according to a DPIC Companies study of 8,600 closed-claim files dating from 1989 to 1995. Electrical and civil engineers defended fewer claims than average, and the cost of each claim was lower. Architects had by far the highest claim count and the highest claim cost, but this reflects the far-higher percentage of total fees architects collect. ■


Claims Risk by Discipline

Source: DPIC Companies

Condos riskiest building type

The same DPIC study compared liability claims made by building type and found that residential condominium projects, while only generating 1 percent of all architect fees accounted for a much larger percentage of claims and claim-dollars paid. By contrast, commercial, industrial, and university projects were relatively low risk. Roof and wall problems were the most common source of complaints, followed by hvac and floors. Most claims are filed by owners; economic loss is the primary damage claimed. ■


Claims Exposure by Building Type

Source: DPIC Companies

Charts by Leanor Glynn

Short Takes

◆ **Performance specs for design/build:** The Construction Specifications Institute and the Design-Build Institute announced they will develop a master guide for writing performance specifications. Design/build firms often prefer specifications that define performance and product qualities rather than name a specific product (800/689-2900).

◆ **Commercial vacancy rates fall** Though current commercial construction is flat or lower, future signals are positive. Real-estate services firm Cushman & Wakefield reports higher space absorption and continued declining vacancy rates in many markets. Of 41 suburban markets recently studied, vacancy declined from 15.1 percent to 14.2. Of 32 downtowns analyzed, the rate slipped to 15.9 from 16.2. Nationally, vacancies dropped to 21.8 percent from 23 percent.

◆ **New salary survey:** There is widespread consensus that the job market for experienced staff is tightening up. The "PSMJ Executive Management Salary Survey" focuses on compensation and related issues for 18 high-level positions, from junior project manager to CEO. PSMJ Resources, Newton, Mass. (800/537-7765).

◆ **Windows to new prospects:** There is now a Windows 95 version of Dodge DataLine, which helps firms identify newly announced projects (212/512-4324). ■

Two Paths to Competitive Success

This month we profile firms that have followed two different paths in their quest not only to secure more work, but to obtain clients that offer more rewarding projects. Chicago-based McClier is a fast-growing example of the strategically focused firm that tailors the services it offers to client needs. Large, multi-discipline firms can make a plausible argument that they have been successfully serving clients' needs for a long time through the more focused services they offer. But a number of such firms have sought increased success by raising their design profile. Ellerbe Becket added signature design talent 10 years ago, but has recently retreated to its traditional strengths. NBBJ has embarked on an aggressive expansion strategy that not only depends on new "name" designers, but on many of those who departed Ellerbe Becket. How and whether such firms succeed over the long term will say a great deal about the profession's future.

Michael J. Crosbie is an architect with Steven Winter Associates, Inc., a building-systems research and consulting firm in Norwalk, Connecticut.

"We've developed a way of aligning the business goals of the client with the architecture and design."
—Tom Rossiter, McClier

"Bringing Peter [Pran] in was a recognition of the realities of business and competition—the need to create as strong a design profile as we could."
—John Gaunt, former CEO, Ellerbe Becket

"You've got to recognize the business climate and what clients want, but that doesn't mean you don't want to deliver the best-designed product. Our view is 'best in product, best in service.' "
—James Jonassen, NBBJ

Tailoring Services to Client Desires

Grant McCullagh (left) and Frank Cavalier co-founded McClier, a firm that has grown rapidly by offering a very broad range of design/build services.

By Michael J. Crosbie

When people talk about reinventing the architecture firm, Chicago-based McClier is the kind of firm they are probably talking about. Architect Grant McCullagh, CEO, founded one of the largest and fastest-growing firms in the country. Started eight years ago with partner Frank Cavalier, a civil and structural engineer (the firm name is a hybrid of theirs), McClier has grown from four people in 1988 to 425 today. Their project base is design/build in primarily industrial and commercial sectors—newspapers, factories, airports, laboratories, food processing, as well as office buildings. But it's misleading to think of McClier only in terms of projects, because that's only part of what they do.

In fact, the partners think of what they do much more broadly. The building may be only one part of a larger continuum that begins with helping the client to think strategically about achieving long-range business goals. McClier offers pre-design services that range from strategic business planning, manufacturing and industrial engineering to distribution planning. The firm's architecture and engineering services feed into construction-management services. And now McClie is moving into such post-construction services as facilities management.

It can offer this range of services as a "turnkey" package, or separately (although i does not build projects it did not design). "It' literally one-stop shopping for the client," notes McCullagh. And there's no reason why architects can't be involved with a much wider range of services, he says, drawing an analogy to advertising firms. "The client shares their strategic business objectives with the ad firm," he explains. "The ad firm comes up with a strategy to achieve those objectives, and implements it all the way through the process."

Design the software, design the buildin
Such a broad conception of what a "design" firm does has as its vanguard corporate-interiors practices that find themselves competing with real-estate consultants or management consultants, and those at AIA promoting its "Practice and Prosperity" initiative.

To McClier, it comes naturally out of the design/build culture that prevails among its competitors in the industrial field. Such an

1

hree firms—all with strong client-service orientations—have each ried their own method of accommodating diverse client needs. Their xperience offers lessons to those facing changing markets.

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pproach means that McClier finds itself ful- ling some rather novel roles. "Ninety ercent of the factories we do start with esigning the computer architecture that nnects the manufacturing processes," xplains McCullagh. And there are other ser- ces, such as assessing a building's physical ndition, which can turn into a renovation.

cClier's brochure lists a dizzying array of ervices, but many are not provided in-house. f the firm's personnel, 35 are devoted to rategic consulting, 275 work in A/E ser- ces, and 100 are in construction. For more ecialized tasks, McClier turns to an array consultants across the country, assembling artnerships tailor-made to client demands.

ndeed, clients laud McClier's approach. They're a very talented group," explains ames Clegg, president and chief operating fficer of Sunbeam-Oster North America, for hich McClier designed and built a new 50,000-sq-ft plant in Mississippi (photo 5). ot only did the firm deliver this complicated roject "on time, and within budget," Clegg ys that he was particularly impressed with McClier's involvement in conceptualizing the plant and its operation, and its understanding of manufacturing and distribution.

A higher profile proves "strategic"

McClier's emphasis on process means that it doesn't distinguish itself by an exploratory design approach or an attention-getting esthetic (photos 3, 4, 5). But four years ago, McClier captured the attention of the design world when it won a number of awards for the restoration of Burnham & Root's famous 1888 Rookery in Chicago, carefully preserving Frank Lloyd Wright's 1905 lobby remodeling. The success of that project helped the firm win the commission to restore the famous 1895 Reliance building (Burnham & Root, and D.H. Burnham & Co.), the exterior of which is now complete.

According to Tom Rossiter, president of the firm's commercial group, the Reliance's success shows how the design/build process can deliver award-winning design. Indeed, the firm won both jobs over more-established historic-preservation firms. "It shows how a non-traditional way of doing preservation work can give the client more in terms of services." In terms of profits, Rossiter calls such projects "a labor of love," but Gunny Harboe, director of the firm's preservation group, says the firm sees the work as "strategically very worthwhile," because it positions the firm to try for a new range of projects. "It shows that we can do high-profile work of a quality beyond simple industrial buildings," he explains. The firm does not now compete with firms known better for design, but such a step would test whether a firm with such a broad range of services could succeed against the specialists.

3

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A McClier portfolio:
1, 2. The Rookery
3. 4. The Winston-Salem, (N.C.) Journal
5. Sunbeam-Oster consolidated manufacturing and distribution, Hattiesburg, Miss.

5

Merging High-Service and High-Design Cultures

McClier defines itself as different from more traditional service-oriented firms, because, notes Rossiter, “We’ve developed a way of aligning the business goals of the client with the architecture and design.” The latter “are important ingredients,” but they are not seen as ends in themselves. Is that approach, however, really different from that of more traditional A/E’s like Ellerbe Becket, which has not only done jobs for such clients as Notre Dame University and State Farm insurance, but has been chief architect for both for decades? Or NBBJ, a dominant firm in Seattle, that sees no divide between high service and high design? Neither firm has gone for the broad range of expanded services embraced by McClier; instead each has tried to meld a service culture with a high-design identity.

Minneapolis-based Ellerbe Becket maintained the classic profile of the profitable, service-oriented, large firm. They did not usually compete for high-profile commissions like those won by Pei Cobb Freed or Frank O. Gehry. That all changed in 1986 when the firm brought in Peter Pran, Carlos Zapata, and Mehrdad Yazdani, all of whom added a dramatic, highly expressive, individualistic design sensibility.

It was a jolt for a firm that wasn’t used to asking its clients to step onto the esthetic cutting edge. A decade later, Pran and the others have moved on. Ellerbe Becket learned that accommodating individualistic design approaches within a culture oriented to serving diverse client interests isn’t easy. That it struggled so long to do so, and that other firms—from Hillier in Philadelphia to Cannon in St. Louis—are trying similar strategies, suggests that at some point “good service,” at least in the traditional big-firm mode, isn’t enough.

Peter Pran, who brought a signature style to Ellerbe Becket, has moved to NBBJ.

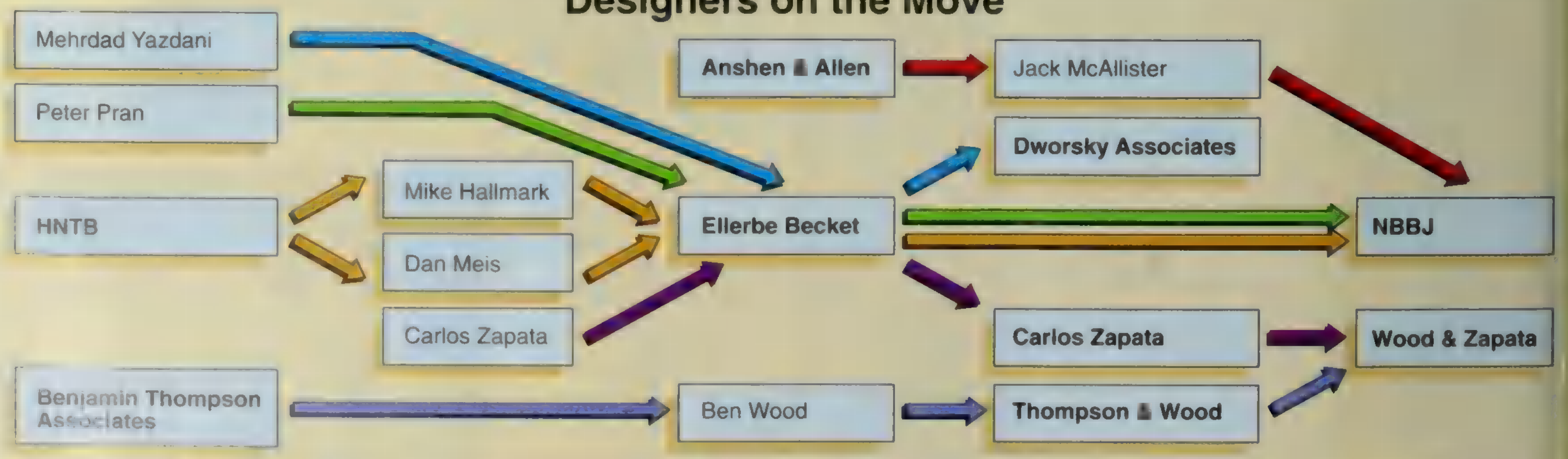
Pran joined the firm’s New York City office after practicing in his native Norway and working in Chicago with Mies van der Rohe and Skidmore, Owings & Merrill. Pran came aboard Ellerbe Becket at the invitation of Wayne Fishback, who headed the New York City office, and who knew Pran from his Chicago days. “Bringing Peter in was a recognition of the realities of business and competition,” says John Gaunt, who was CE at the time, including “the need to create as strong a design profile as we could reasonably create.”

Singular designer meets team culture

Observes Rick Lincicome, current president of Ellerbe Becket’s architecture division, “W benefited from Peter’s credibility and visibility in the architectural world, and in recruiting young talent,” such as Zapata, Yazdani, and others. “Peter had a profound effect on the firm from the start, with his focus on cutting-edge design,” says another young architect and Pran fan, Richard Varda of Ellerbe Becket’s Minneapolis office.

Pran was involved in, or gave critiques on, projects throughout Ellerbe Becket’s five offices. He raised the firm’s profile by winning a number of design competitions, such as the New York City police academy (with Michael Fieldman, a project that has not gone forward due to a change in the city’ political climate) and the New York State Psychiatric Institute (overlooking the

Designers on the Move



idson River on Manhattan's Upper West de—top—and now nearly complete). Pran so provided an entree for Ellerbe Becket to international work, garnering commisons in such thriving markets as Indonesia.

hen markets contract

an's role at Ellerbe Becket wasn't easy to commodate. "We're a team-based organizan," explains Lincicome. Pran challenged e firm, "because Ellerbe Becket was not mfortable with designers of such individuty." Lincicome says Pran's celebrated work reated barriers with other folks who were ing design in the firm." Adds Varda, "Peter s a unique personality, and sometimes it is rd to integrate him into a team environent." But Lincicome explains that these nsions were not fatal, that the firm has a od cross-section of talent, and that a single sign vision was not what Ellerbe Becket as after. But it's clear Pran's sensibility fected some of Ellerbe Becket's most preciated recent work, such as the Vardasigned Leamington Municipal Transit Hub ECORD, June 1993, pages 126-129].

ill, Gaunt's and Fishback's vision foundered a harsh reality. A number of important arkets for the firm contracted in the early 90s. Typical was health care—a large and ofitable area for the firm—which had tighted up as uncertainty rose over the fate of e nation's health-care system. This focused anagement on cost-cutting, observes zdani, "and, as is usual with large organizaons, design is the first thing that suffers." e and other senior designers feel that their ncerns were not forcefully represented in anagement, where engineers more than chitects held sway, and management did ot see a bottom-line value for design.

a 1994 shakeup, Gaunt departed, and the rm's commitment to exploratory design colpsed, according to Pran and other young esigners who had been attracted during his nure. "We had hoped to take a few jobs and ake them exceptional," recalls Zapata. "I elieve in big firms," he says, but was frusated that Ellerbe Becket seemed unable to et its most cutting-edge projects built. He ft to start his own Miami firm in 1991,and as recently merged with Ben Wood, a

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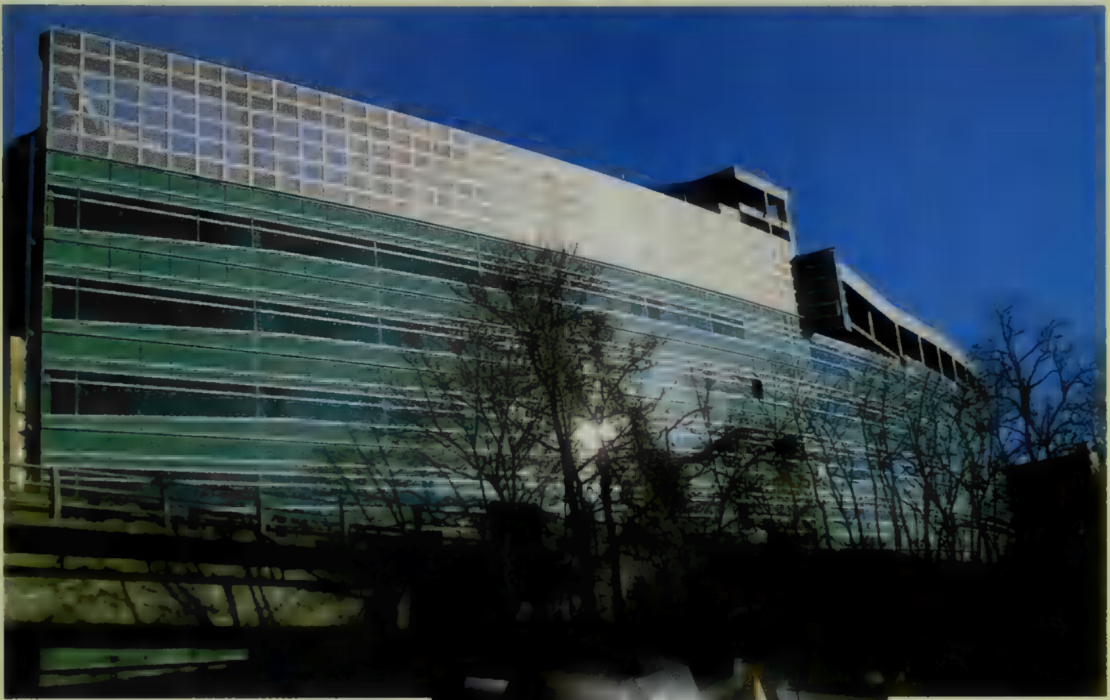

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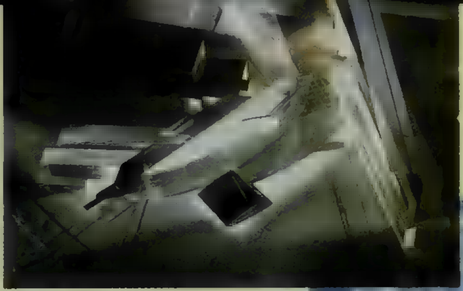

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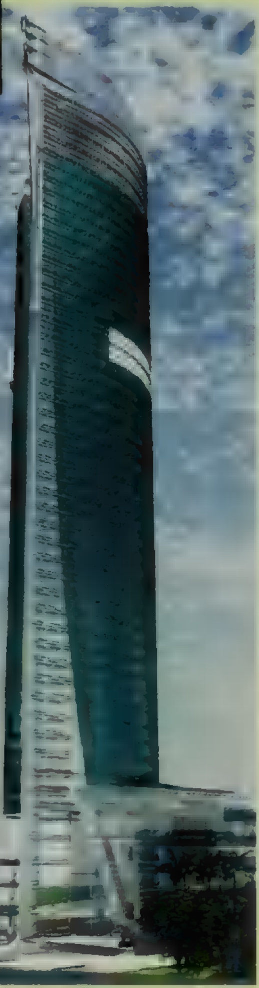

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A Peter Pran portfolio, all with Ellerbe Becket, except as noted.
7. New York State Psychiatric Institute, New York City
8. Academic complex for the State University of New York, Binghamton.
9. Karet office tower, Jakarta, Indonesia
10. Graha Kuningan, Jakarta, Indonesia. (Pran will complete this project with NBBJ.)

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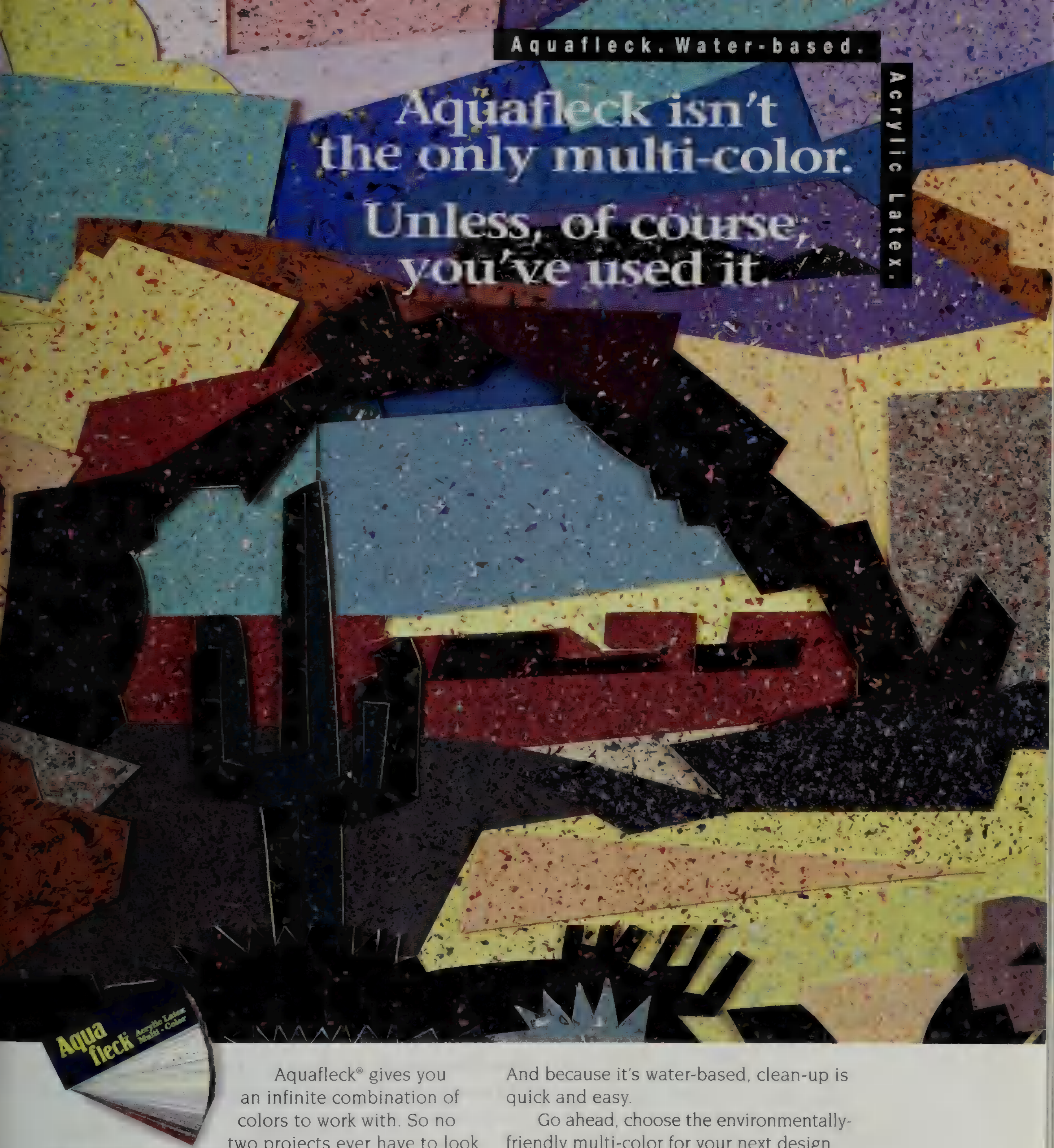
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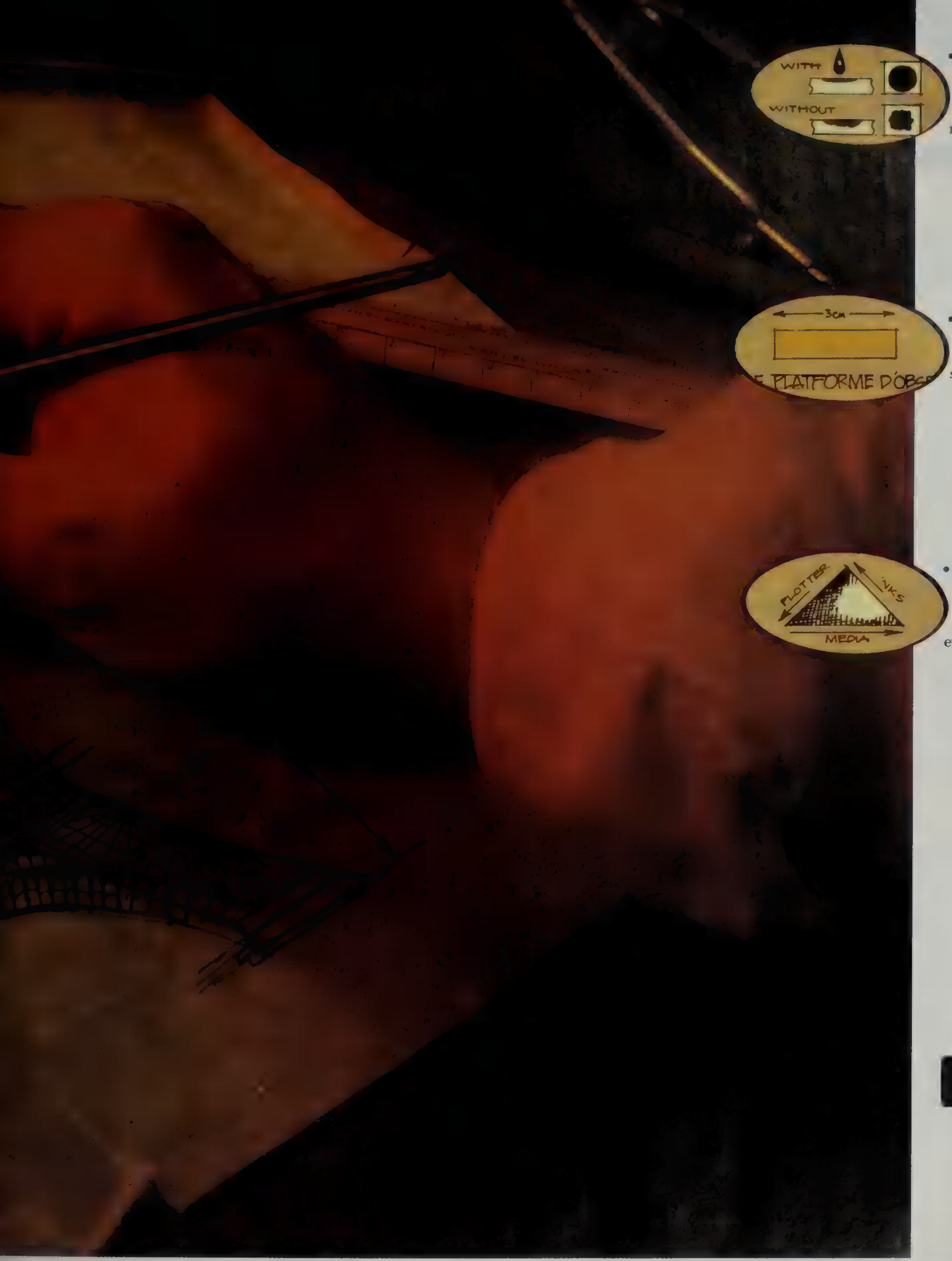

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Quiet Progress in Managing Environmental Toxins

By Nadav Malin

Just because environmental hazards in buildings aren't often in the headlines these days doesn't mean that architects and building owners can ignore the difficult cost and public-safety issues presented by such substances as asbestos, radon, lead in paint, and electromagnetic-field radiation. There is quiet progress on a number of fronts, however, that can make management and abatement less costly and less burdensome.

Although the architect must rely on specialists like industrial hygenists and specialty contractors for management and abatement specifics, the architect has a prominent role in helping the owner identify hazards, navigate the regulatory morass, and decide among remedial strategies. Clients may be genuinely unaware of the dangers or they may play dumb, hoping to avoid expense and inconvenience. Either way, they are subjecting workers and occupants to real hazards. Lead and asbestos, in particular, are more dangerous when disturbed; incompetent removal can offer the greatest health risk.

> *The architect has a prominent role in helping the owner identify hazards, navigate the regulatory morass, and decide among remedial strategies.*

Biggest lead-paint risk: children

Federal and many state regulations distinguish between the presence of lead paint and the existence of a lead *hazard*. If the paint is in good condition, not subject to abrasion or impacts, and not on a surface that a child might chew (such as a windowsill), it may pose little hazard. Unfortunately, lead-based paint tends to become brittle over time, so it often flakes off walls and sloughs off surfaces that are subject to wear.

Cases of childhood lead poisoning occur most frequently in residential rental units that have not been well-maintained, and in homes where renovation or remodeling is undertaken by uninformed contractors or occupants. Ironically, many cases of lead poisoning occur during well-intentioned efforts to remove lead paint from walls, when appropriate measures to prevent exposure to the leaded dust are lacking. Only vacuums that use high-efficiency particulate-air (HEPA) filters will reliably trap lead dust, for example, according to abatement experts.

States or localities may have certification or training requirements for lead-abatement contractors. OSHA and EPA are working on applicable nationwide requirements. Federal regulations apply to any federally assisted housing. Each funding program has had its own rules, which, until recently, have been scattered throughout the thousands of pages of regulation at the Department of Housing and Urban Development (HUD). Such rules will soon be consolidated in one place, according to Ronald Morony, deputy director of the HUD Lead Office.

Another new federal regulation will soon require that anyone selling or leasing a residential property built before 1978 disclose the presence of any known lead-based paint, and provide to purchasers or renters any available records on lead paint and lead-paint hazards. Promulgation of this rule was "a real breakthrough," according to Marianne Lavelle, staff writer at the *National Law Journal*, because the rule had long been stalled. The law further requires the sellers and lessors to provide purchasers with an approved lead-hazard information pamphlet and a 10-day opportunity to conduct a risk assessment or inspection for lead paint.

An unfortunate effect of this regulation is that owners may not test for lead in order to avoid disclosing its presence upon sale. "You are not required to reveal information you don't have," points out lead-abatement trainer James Keck of Leadtec Services, Inc. in Baltimore. Keck feels the disclosure requirement is important since it increases public awareness. Unknown as of yet is whether disclosure makes a residence unsellable, just as the presence of asbestos has made millions of square feet of office space all but unrentable.

Lead-abatement options

The handling of lead-based paint falls into two categories: managing the lead in place, or removing it. If the surface is not accessible to children and not likely to release paint flakes or dust, simply monitoring the surface, by visual inspection or by periodic testing of collected dust, may be adequate, though many people would seek the added protection of a coat of new paint.

Encapsulation with an approved barrier coating is another option for managing lead paint in place. A just-approved standard, ASTM E-1796, covers liquid-coating encapsulants. Most government regulations accept encapsulation that meets this standard as a "permanent" abatement strategy if the coating can be expected to last at least 20 years. Although high-quality encapsulants are quite expensive, overall costs are usually much lower than the cost of removing and replacing paint. The main drawback of encapsulation is that the lead paint remains in place, where it could become a hazard or liability during future alterations to the building, even if the encapsulant itself performs perfectly.

Lead-based paint may also be encased by installing a new wall surface, such as drywall. Encasement behind a solid material is usually considered more secure than encapsulation, but architectural details in rooms are usually lost behind the new surface.

Nadav Malin is managing editor of Brattleboro, Vt.-based Environmental Building News *(nadav@ebuild.com).*

Continuing Education

AIA members can earn two AIA/ARCHITECTURAL RECORD continuing-education learning units by examining the learning objectives (page 133), reading the story on these pages, completing the questions, and filling out and returning the self-report form, page 134.

Toxic substances like asbestos, lead in paint, radon, and electromagnetic field radiation haven't made the headlines recently, but there is increasing consensus on management and abatement.

Removal of lead-based paint is difficult and expensive, partly due to the need to protect workers and others in the vicinity from exposure to lead residues. In residences, sandblasting is rarely feasible due to the dust generated. Chemical strippers may be effective on metal surfaces, but on wood they tend to leave a residue of lead, according to Keck.

Mechanical strippers, which knock paint loose within a vacuum head, are very dependent on operator skill and care. The heads are unwieldy, and must be held tightly against the surface to prevent lead dust from escaping. Also, "We try to discourage paint removal on porous surfaces unless it's absolutely necessary," Keck says. "If it is necessary, we prefer heat as a method of removal." He cautions, however, that heat cannot be used in an occupied building because of the fumes generated. The only truly effective way to remove lead on woodwork is to replace it, Keck advises.

Lead-abatement costs coming down

On the outside of buildings, and on commercial and industrial sites, blasting can be used. Equipment operators must wear protective clothing, and a special enclosure is used to contain the operation. All paint removed, along with the contaminated blasting medium, must be collected and disposed of in an approved hazardous-waste landfill. The cost of this disposal has led to the development of equipment that uses Dry Ice (solid carbon dioxide—CO_2) as the blasting medium. John Feller, a project manager with Boelter Environmental Consultants, of Park Ridge, Ill., calls CO_2 blasting "the biggest new development I've seen" for lead-paint removal. After striking the painted surface, the Dry-Ice pellets evaporate, leaving only the paint particles, which minimizes disposal.

Cumbersome and expensive as it is, the cost of lead abatement in most situations is actually coming down. New technologies are making it easier for contractors to work effectively while complying with safety laws. With experience, contractors' comfort level with the work is improving, giving them the confidence to bid more competitively on jobs. Finally, many safety precautions used initially on lead-abatement sites were borrowed directly from the asbestos-abatement indus-

Risks and Regulations Affecting Toxics in Buildings

Lead paint

Hazard: At low levels, the neurotoxic effects of lead affect primarily children's developing brains and nervous systems, causing reductions in IQ and attention span, reading and learning disabilities, hyperactivity, and behavioral problems. National average lead levels in blood have come down significantly since lead was banned in gasoline and other products. However, lead poisoning, primarily from ingestion from dust or paint in buildings, remains "the most common environmental disease of young children," according to the CDC.

Regulatory history: Containing as much as 50 percent lead, lead-based paint was commonly used well into the 1960s. Beginning as early as 1940, however, the amount of lead in paint and the frequency of its use declined, until it was banned for use in buildings in 1978.

Asbestos

Hazard: Prolonged exposure can cause lung and other cancers, and scarring of the lung (Asbestosis). Smoking has a synergistic effect with asbestos exposure, more than doubling the likelihood of developing asbestos-related cancers, according to the CDC.

Regulatory history: Asbestos is not legally banned. Lawsuits, however, have effectively prevented companies from continuing to manufacture asbestos-containing building materials.

Occupational Health and Safety Administration (OSHA) regulations distinguish between friable and non-friable asbestos-containing materials. Products used for thermal insulation and surfacing applications are categorized as friable, and require a more complex abatement process, while those incorporated in other products—wallboard, floor tile, roofing, siding, and construction mastics—are considered non-friable, and can be removed or managed under a less-strict regime.

Radon

Hazard: Radon gas and its decay products can release cancer-causing radiation in lungs. Only long-term exposure is known to affect health. Radon occurs naturally in certain soils and rocks, and typically gets into buildings through cracks or gaps in the foundation or floor slab, or via water from underground sources.

Regulatory history: The EPA has weathered a great deal of criticism for its 4 pCi/l action level, yet remains wedded to it. The Agency estimates that one out of every 15 homes exceeds that action level on a regular basis. The Canadian government, in contrast, has set a much higher level of 20 pCi/l, which many argue is too high.

EMF radiation

Hazard: Electromagnetic radiation is alleged to cause cancer, and may adversely affect development of fetuses.

Regulatory history: Efforts have been voluntary, including improved computer-monitor shielding. ■

Lead poisoning, primarily from ingestion from dust or paint in buildings, remains "the most common environmental disease of young children," according to the U.S. Centers for Disease Control.

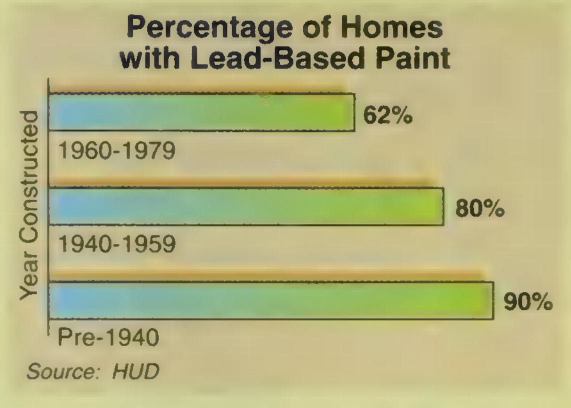
try, but lead abatement does not require such strict procedures.

Asbestos: new management alternatives
The perception is widespread that there is only one thing to be done with asbestos. "Usually people think in terms of removal," says Gerald Karches, CEO of Southwest Hazard Control, Inc., of Tucson, Ariz. Because of the cost and risk in removing asbestos, however, procedures to manage the material in place have become increasingly accepted [RECORD, October 1990, pages 110-111]. Asbestos-containing materials that are in good condition—not flaking, crumbling, or otherwise releasing fibers—may require only monitoring to ensure that they are not disturbed in an unsafe manner. If the asbestos-containing material is likely to release fibers, some action is required. For readily accessible material, removal is still the most prudent approach.

Where removal is less feasible, specialists are increasingly recommending encasement as a viable alternative. "About five to ten percent of our work is an encasement process of some kind," explains Karches, who thinks it would be used more if clients realized "that encapsulating-in-place is an option."

Safely encasing a low-density, fibrous material such as asbestos fireproofing is no simple matter, but new products are available that do the job well, according to Karches and other who have used them. The encapsulant must be tested on each job to ensure that the additional weight won't pull the material loose, and it must not reduce the installation's fire-retardant properties.

Controversial threshold of radon risk
In the 1980's and early 1990's the EPA's Radon Division actively spread the word about the dangers of radon, and encouraged homeowners to use test kits to evaluate indoor air. Extrapolating from studies of cancer among uranium miners, the EPA determined that a lifetime of exposure to radon at a level of 4 picocuries per liter (pCi/l) constitutes an unacceptable risk, and set that level as its recommended action threshold. While the fact that radon causes cancer is well-accepted (indoor health consultant Terry Brennan calls radon "the best documented human carcinogen"), some recent epidemiological studies have failed to link radon with cancer at such low levels.



Beginning as early as 1940, the amount of lead in paint and the frequency of its use declined, until it was banned for use in buildings in 1978. Actual lead poisoning most often occurs in poorly maintained dwellings or during improper removal.

The test kits that are widely available to consumers consist of activated-charcoal filters that must be exposed to the indoor air for a given length of time, and then sent to a laboratory for analysis. Radon levels in a given space can vary widely by time of day, season, weather, and occupant behavior, so test kits with longer exposure times are considered more reliable. "If there's no pressure in terms of time, we always recommend that people take a longer-term measurement," says Phil Jalbert of the EPA's Indoor Environments Division (formed last year from the merger of the Radon and Indoor Air Divisions). Quality of the laboratory analysis on the exposed charcoal can also vary, so the EPA recommends that users seek out kits from companies that participate in the Agency's voluntary certification program.

When short-term testing finds elevated radon levels, EPA recommends verifying the problem with more comprehensive (and expensive) long-term testing. Mitigation strategies include sealing gaps and cracks in foundations, floor slabs, and other areas of ground contact, and increasing ventilation in habitable areas with earth contact. While radon is primarily a hazard in homes, the site of structures that may expose occupants over extended periods, such as schools and nursing homes, should also be analyzed.

Electromagnetic fields: risks overstated?
Electromagnetic fields (EMFs) received a great deal of notice several years ago when a number of studies were published suggesting a link between low-level EMFs and cancer. The risks were viewed with skepticism by many scientists because the fields in question are far too weak to affect chemical bonds—the mechanism by which such fields generally interact with matter. Some subsequent studies contradicted the findings in the earlier reports, supporting the skeptics' position. But other possible biological effects have been proposed, which could explain a connection between EMFs and health risks. These include an effect on the communication across cell membranes, an impact on the production of melatonin, and an interaction with ions in the body that can affect chemical bonds.

Most electric power systems carry alternating current, which produces oscillating electric and magnetic fields. Electric fields are relatively easy to shield, but magnetic fields are not. Magnetic fields, the source of most of the concern with EMFs, do drop off rapidly with distance from the source, however.

Is the threat posed by EMFs real? "It all depends upon your interpretation of the studies that have been published, and it depends upon your values," says Dr. Michael Greenberg of the Department of Urban Studies and Community Health at Rutgers University. Greenberg goes on to say that as an advocate for public health, he feels that there is enough evidence to suggest that the risk from sources such as high-voltage power lines should be taken seriously. In practical terms, Greenberg points out that market economics are already discouraging construction near transmission lines, because builders know that such sites will be less desirable.

Greenberg is less concerned about EMFs from sources inside buildings: "There's a lot less evidence to suggest that the indoor sources would cause things like cancer or low-birthweight babies." EMFs in buildings can cause problems for sensitive computer systems, however, including flutter on computer screens. For this reason alone, it is wise to locate computer users at some distance from main power supply lines in a building. Fields generated by computer monitors were once suspect, but newer monitors have been redesigned to reduce emissions.

Because sources of EMFs, like transformers or main service lines, may be hidden from view, some consultants recommend checking a space with a gaussmeter before designing the layout of systems and personnel. In new construction or renovation projects, relatively minor alterations to the electric wiring may help to reduce the current loops that generate EMFs.

Further information

◆ "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing" is offered by the federal government for a small small handling fee: 800/245-2691 (phone); huduser@aspensys.com (e-mail).

◆ National Center for Lead-Safe Housing, 505 American City Building, Columbia, MD 21044; 410/992-0712.

◆ The Environmental Information Association (4915 Auburn Ave., Suite 301, Bethesda, MD 20814; 301/961-4999) is a good source on health hazards and abatement strategies for both lead and asbestos, with a training center in Atlanta, and field instructors throughout the country.

◆ Industrial hygenists are certified to do consulting on lead and asbestos by: American Board of Industrial Hygiene, 6015 W. St. Joseph, Suite 102, Lansing, MI 48917-3980; 517/321-2638 (phone); 517/321-4624 (fax).

◆ Radon mitigation efforts at the federal level are the purview of EPA: 800/557-2366 (radon hotline); Dave Price, Indoor Environments Division, 401 M St. S.W., 6604J, Washington, DC 20460; 202/233-9447.

◆ States have mapped likely radon sites. Usually a radon office within the department of public health is responsible. The Web site www.epa.gov/radonpro/contacts.html lists state radon offices as do local American Lung Association offices (800/LUNG USA).

◆ The best technical resource on EMFs is *Microwave News* (P.O. Box 1799, Grand Central Station, New York, NY 10163 (212/517-2800). Most local utilities also offer guidance. An EMF interest group is: EMR Alliance, 410 W. 53 St., Suite 402, New York, NY 10019; 212/554-4073 (phone); (212/977-5541 (fax); emrall@aol.com (e-mail). ■

Health Hazards in Buildings

Hazard	Occurrence	Potential Health Effects	Recommended Strategies	Principal Regulations
Lead Paint	Very common in pre-1960 buildings	**At high levels:** coma, convulsions, death. **At low levels:** reduced IQ and attention span; reading and learning disabilities; hyperactivity; behavioral problems	Control of dust (HEPA vacuum), encapsulation, removal	Vary by state and locality; disclosure required upon sale or lease; many rules affect federally funded properties; OSHA reg's govern worker safety
Asbestos	Very common in pre-1980 buildings	Lung cancer, asbestosis, other cancers	Control of fibers (HEPA vacuum), management-in-place (monitoring and/or encapsulation), removal	EPA reg's cover repair, removal, demolition, and disposal; alteration or removal must be done by certified contractor; OSHA reg's govern worker safety
Radon	Varies by local geology; 1 in 15 homes exceed EPA action level	Lung cancer	Sealing off possible gas entry routes, increased ventilation, depressurization of sub-slab or crawl space	No national regulations; some states have disclosure requirements upon real-estate transactions
Low-level EMF	Ubiquitous in developed areas, modern buildings	Nature and degree of risk is very controversial. Ascribed risks include luekemia, other cancers, birth abnormalities	Maintain distance from sources, avoid wiring designs with current loops that generate larger fields	No regulations affecting low-level EMF

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A Data Gateway For AutoCAD

A long-awaited update of AutoCAD Data Extension expands on the software's ability to link AutoCAD drawings to external data. But it must be used with AutoCAD13, with drawings in the Release 13 mode.

y Steven S. Ross

's been in the works for more than two
ars, but AutoCAD Data Extension has
ally been upgraded. It's not a moment too
on for Autodesk, because many other
ndors have been developing ways to link
rge data sets to drawings—especially for
ographical information systems (GIS) and
cilities management.

hat's more, drawings will soon be contain-
g extra information to turn collections of
es into "objects" that in some ways mimic
al doors, windows, and so forth.

hus, in the next few months we'll be taking
oser looks at MicroStation GeoGraphics and
her data utilities, and at new CAD releases
th lots of data hooks built in—among them
rchiCAD, Architrion, and AllPlan.

utoCAD Data Extension elease 2

endor: Autodesk, 111 McInnis Parkway,
n Rafael, CA 94903. 800/964-6432.

uipment required: Computer-capable of
nning Windows; Windows 95 or NT and at
ast 32MB of physical RAM and 500MB of
sk space for virtual memory strongly
commended. You'll need AutoCAD Release
c4a or newer to run it.

is long-awaited update of ADE vastly
pands upon the ability of the original—and
utoCAD itself—to link AutoCAD drawings
external data. The data can be graphic or
rt of an external database. The biggest
ange in functionality is in ADE's ability to
en more than one data type at a time.

ot so obviously, ADE allows you to update
aphic and non-graphic objects from almost
y number of AutoCAD drawings while in a
ngle AutoCAD session. That is, you can edit
manipulate the objects and send them
ck to the drawings they came from.

at's a big deal, because AutoCAD itself can
ly open one drawing at a time for editing or
t-and-paste operations. And, unless you
ve Windows NT, you can't open more than
e copy of Release 13 at a time, so you're limited to one drawing, period, unless you have something like ADE.

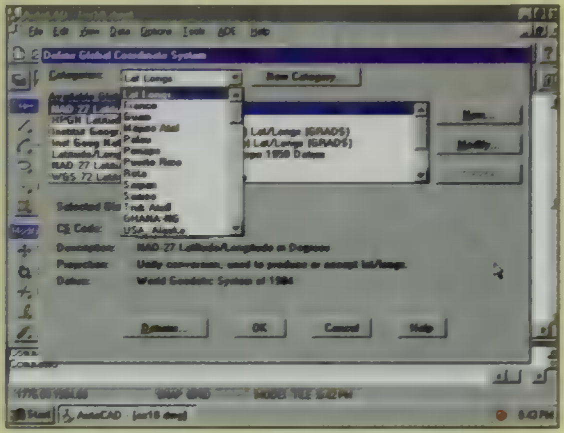
One of the original key functions for ADE was its ability to select only a subset of the data in another source for attaching to a drawing. This function was especially useful for geographical information systems and facilities management, which produce staggering amounts of data. But as computers have gotten bigger and more and more data have been added to drawings themselves, ADE's uses have expanded. As object-oriented drawing methods come into play over the next few years, drawings will continue to grow.

You can select by layer, object type, color, and so forth. It helps if all the drawings with which you are working are done the same way—have the same layer definitions and symbols. But even that's not absolutely necessary if you are clever in the construction of "queries" that snatch your needles of data out of haystacks of available information.

This selection feature allows more than one person to work on a drawing at the same time, too. You can carve the drawing up by layer, building subsystem, or even by room or building wing.

The carving can be made somewhat easier by saving queries for reuse. The queries are done in SQL (structured query language). SQL is a bit wordy, but it is standard across a wide range of database programs. An ADE dialog box writes much of the query automatically as you choose various options for selecting the data or section of drawing you need.

The big drawbacks: You have to use ADE with AutoCAD Release 13, and with drawings in the Release 13 format. The program, in common with most database software, requires enormous amounts of memory. Autodesk recommends that you keep drawing sets (groups of drawings that contain data you want to manipulate or attach to the drawing you have opened in AutoCAD) you work with under ADE to 20MB, and that you select no more than 25 percent of that at a time in queries.



ADE is not specifically for GIS data, but it comes with a coordinate definition utility that is aimed specifically at this market.

Autodesk recommends that you add 8MB of virtual memory for every megabyte above that 20MB. We found we could "cheat" on that quite a bit, especially with database tables instead of drawing files. Virtual memory is cheap, however, because it simply takes up disk space. The 500MB or so that Autodesk recommends for a 50 or 60MB set of drawing files will cost you only a hundred dollars.

Manuals: One small. quick-start installation guide, one 234-page paperback with good tutorials.
Ease-of-use: Good once everything is set up. But installation is tricky, and so are queries for data from different sources. You'll need some systems help for all but the simplest installations. You need AutoCAD Release 13 c4a or better. The CD-ROM version of ADE comes with a complete copy. The floppy-disk version only has the changes to upgrade from c4.
Error-trapping: The sheer versatility and reach of the package can get you into trouble. A query may not return all the data you want because some of the data may have been miscoded. Thus, it is wise to test queries on each drawing or database source one at a time, before pulling everything together. ■
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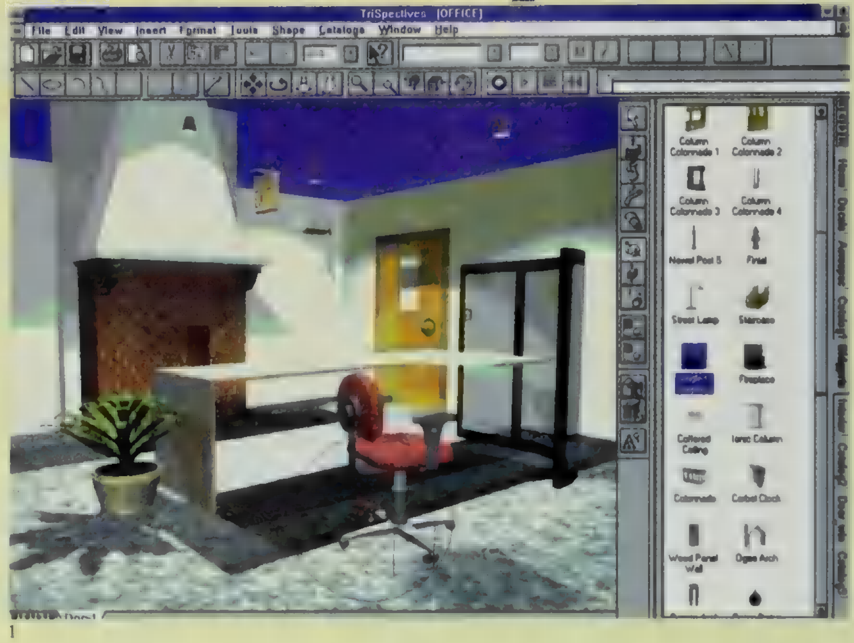
CORRECTION
Last month we misidentified Bentley Systems' TriForma software. We regret the error.

CAD and Visualization Tools At A/E/C Systems Show


TriSpectives - [OFFICE]
File Edit View Insert Format Tools Shape Catalogs Window Help

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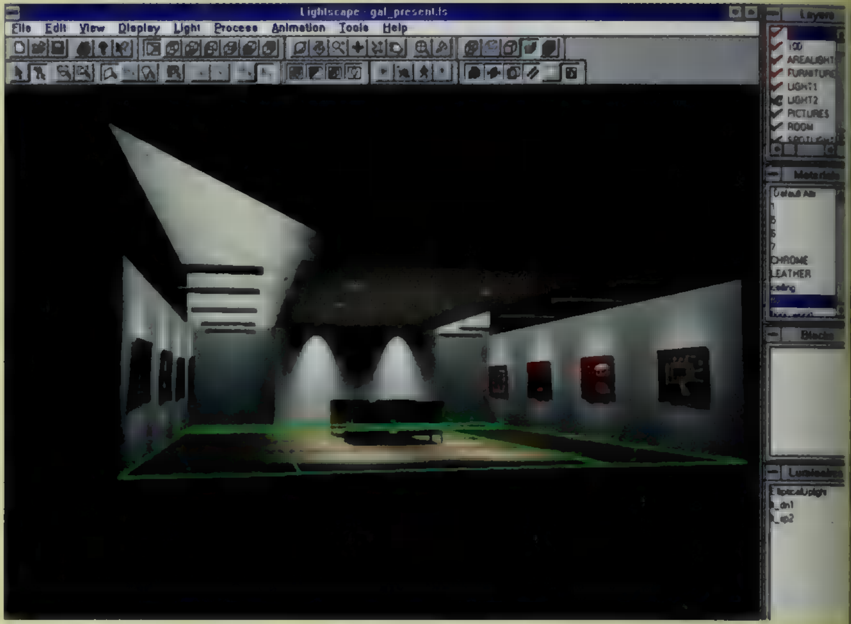
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2

By Steven S. Ross

CAD and rendering software

In a year when neither of the "big two" American CAD vendors, Autodesk and Bentley Systems, made major changes to their offerings, the focus at the annual A/E/C Systems Show in Anaheim shifted to upstarts with good ideas. Clear trends: easier-to-use, stable rendering and visualization products, and software requiring Windows NT or Windows 95, or Macintosh System 7.5 (and lots of memory for any of them; 16MB minimum, 32MB or more recommended) to operate.

Bentley even released a version of MicroStation for IBM OS/2 Warp, with the OS/2 interface.
Phone: 800/236-8539.

The big news was in the spread of visualization tools (rendering software, for instance) on top of CAD. IBM showed its 3D Interaction Accelerator visualization software for placing TV cameras at the Olympics and for security and ticketing. IBM used AutoCAD and Autodesk's Kinetix animation software (Autodesk spun off its 3D Studio and other animation products to a new company, Kinetix) on IBM RS/6000 workstations.
Phone: 800/879-4233.

Graphisoft's ArchiCAD 5.0 was demonstrated (the final versions shipped in July). The underlying 3D database is more tightly integrated with drawings, there are more drawing tools, and better control of multiple symbol libraries. The Mac version, as with earlier releases above 4.2, can create QuickTime VR animations. The Windows 95/NT version can be integrated with LightScape's flexible photorealistic rendering engine, which includes a terrific radiosity control for representing indirect lighting.
Phone: 415/703-9777 for Graphisoft, 800/343-0073 for LightScape Technologies.

GDS Corp. announced it has acquired rights to Piranesi, an "interactive" rendering package; you can manually "edit" the rendered image more or less as you would in a paint program, except that it works in three dimensions. The prototype runs on SGI hardware. A Windows NT version is due at the end of the year.
Phone: 303/741-8587.

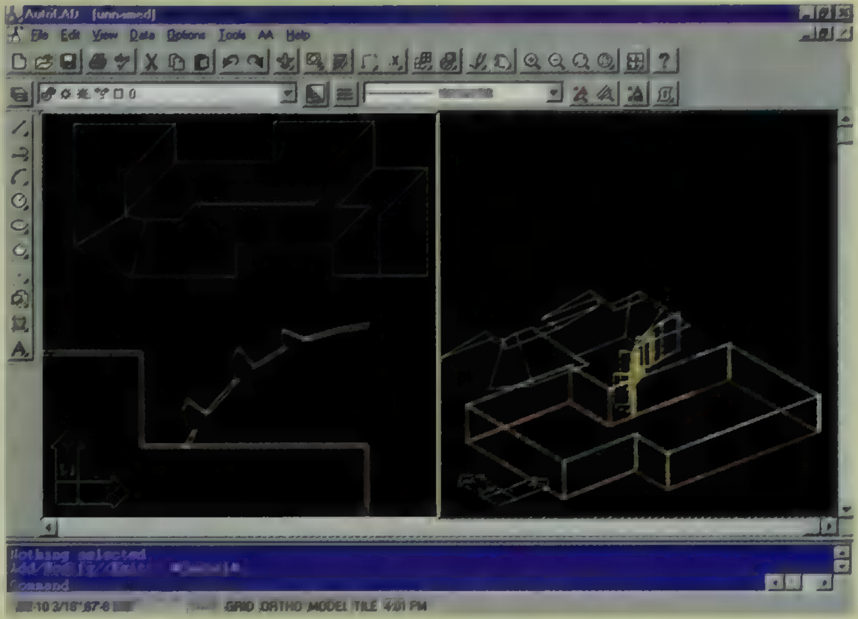
Bentley Systems showed a number of packages for improved visualization. The new release of MicroStation MasterPiece (pictured in last month's issue) now includes radiosity, photomatching to superimpose a rendered image on a photo (even synchronizing orientation and perspective on the model to fit the picture), and solid texturing. Its TriForma add-on sits on top of MicroStation to allow conceptual 3D modeling. You sculpt 3D surface models, not solids, but the models usually behave like solids.
Phone: 800/236-8539.

Speedikon from AEC Solutions is also an add-on (for MicroStation and AutoCAD) that helps build 3D models from 2D plan views. The resulting files can be moved from one CAD program to the other.
Phone: 800/298-2327.

TriSpectives and TriSpectives Professional from 3D/Eye combine illustration, animation, and 3D solid modeling. TriSpectives requires Windows 95 or NT. The 3D modeler is based on ACIS (the standard solids-modeling software engine). The package comes with prefabricated shapes and standard objects (such as desks and chairs) that can be combined to handle many modeling tasks almost without drawing. Architects should like it; facilities managers should love it because standard shapes can be inserted on drawings (and FM personnel don't always know how to draw).
Phone: 770/937-9000.

Visio, which started the "draw with prefab shapes" movement, showed its new Visio Technical 4.1 with better database connectivity (the shapes are governed by underlying data on size and orientation). It becomes easier to use shapes from a manufacturer's catalog and bring them into a Visio drawing through the database. It runs in Windows 3.1 but really shines in Windows 95.
Phone: 206/521-4500.

Hitachi Software has a Visio add-on called SmartView for integrating raster data with *endors at A/E/C Systems concentrated on adding AD visualization and modeling tools, and on faster raphics-display monitors and photorealistic printers.*


AutoCAD [unnamed]
File Edit View Data Options Tools AA Help
GRID ORTHO MODEL TILE 4:01 PM

4

1. TriSpectives, from 3D Eye, combines 3D modeling illustrations and animations features. Predrawn objects such as chairs and desks can be popped into place.
2. Lightscape Technologies' Lightscape provides 3D simulations which users can interactively walk through and explore.
3. The professional version of 3D Eye's TriSpectives.
4. Softdesk Inc.'s Auto Architect 8.0, an add-on drafting aid for AutoCAD 13, was previewed by RECORD at the show. Its release will be late 1996 or early 1997. Phone: 800/763-8377.

e vector format of Visio drawings; you can can an image into the drawing, or "coat" a hape with it. Visio is still a 2D program, owever, not 3D.
hone: 303/449-3200.

endors of third-party add-ons to AutoCAD lso showed new visualization tools. Softdesk nnounced an AutoCAD ARX application, TX 7.5 CAD Overlay for converting raster nages to vector formats. Promised for elease this fall, it includes readily manipulated raster data before vectorization.
hone: 603/428-5033.

etiv showed ArchT 13.5 for AutoCAD 13. his is one of the first shipping applications sing the ARX, an object-oriented gateway nto AutoCAD. ArchT is pushed as a drafting roductivity tool but it includes Autodesk utoVision for fast rendering. There are trong links to Wiley's *Architectural Graphic tandard* CD and Timberline Precision stimating.
hone: 800/458-0690.

agle Point pushed its new Virtual Image ast, photorealistic rendering software, and s Virtual Simulator real-time animation ackage for walkthroughs.
hone: 800/678-6565.

orel, well-known for its drawing and paint rograms, fulfilled its promise to enter the AD market with a suite of animation and endering tools released just before A/E/C began. CorelCAD, for Windows 95/NT, includes ACIS boolean modeling, good drawing tools, auto dimensioning and so forth. In the same box, you get Dream 3D, Multimedia Manager, a scripting language and other tools for clever presentation work. Corel is also selling Numera's Visual CADD, the successor to Generic CADD.
Phone: 613/728-8200.

The big news at BAGH was the top-to-bottom rewrite of Architrion. When this package first appeared in the mid-1980s, it was the most advanced—and most usable—2D/3D CAD software for the Macintosh. But the underlying file structure used integer math and cube-like entities for speed. As the Mac got faster, the severe limitations of this approach became more apparent; other Mac packages passed Architrion in ability to draw complex shapes in 3D. Version VI, the first version with revised, modern file structure, was shown to architects for the first time at A/E/C Systems. It's available for Windows 95/NT, SGI Unix, and Macintosh Systems 7.5.
Phone: 800/561-0522.

MacDraft, another echo of Macintosh history, returned as a product of Microspot MacDraft. Originally developed by IDD, it was the first successful 2D drafting program for the Mac; the new version, 4.2, has been recoded for better running with the Power Mac CPU. It remains fast and easy to use. The underlying database can be replicated as an Excel spreadsheet. Microspot has also been selling 3D World, a 3D design and rendering program for the Mac, since early this year. Phone: 408/253-2000.

FIT was showing Cadvance, one of the first full-featured Windows CAD programs; after several years of stagnation and corporate ownership changes, Version 7 was due for release as we went to press in mid-August. Despite its robust feature set, it remains happy in Windows 3.1 or 3.11—it will work with Windows 95 but doesn't require it. Cadvance LiTe 6.3, a 2D version aimed at the AutoCAD LT market, was released at the show.
Phone: 714/956-3171.

Would you rather freehand sketch than draft? Two vendors unveiled software that allows you to rough out shapes. The software

then cleans up the drawing automatically. Intergraph began distribution of its Imagineer 2D drawing package for Windows 95 and NT; it can save files in AutoCAD or MicroStation format.
Phone: 800/692-8069.

Nemetschek Systems showed a beta copy of an AllPlan upgrade due this month that brings a "sketch" interface to this high-end Windows 95/NT 3D package. The firm's AllPlan FT also now permits users to make bubble diagrams and a Windows-like interface instead of the European-style original menus.
Phone: 415/289-3752.

Vdraft from SoftSource will be a big help for AutoCAD users who want to edit more than one drawing at once and cut-and-paste among them. Vdraft uses the SoftSource programming tools for DWG compatibility, reads and writes DWG and DXF files through Release 12, and runs under Windows 95/NT. It integrates with SoftSource Web publishing tools as well. The program was unveiled at A/E/C but probably won't be available until the fall.
Phone: 800/877-1875.

FelixCAD from FCAD is a 3D drafting program that's AutoCAD-compatible. But it can also be a Windows 95/NT developer's kit for those who have vertical-market solutions such as plant layout or kitchen design for AutoCAD, MicroStation and similar high-powered CAD engines, and want to create stand-alone applications instead of add-ons. This saves customers the cost of expensive extra AutoCAD seats.
Phone: 415/893-1240.

Display hardware

Lower prices and higher versatility were the watchwords this year. The pricing was expected but the functionality advance was not. Much of the advance comes from the 32-bit Windows NT/95 environment, which offers several standard graphics acceleration methods (such as OpenGL).

Appian Graphics, for instance, showed its new Jeronimo J2 PCI-bus video card, capable of 3200 by 1200 resolution across two monitors and up to three video windows at 30 frames per second—all in one card. You can have a second J2 in the system, for spreading images across four monitors. It comes with Windows NT and 95 drivers, and separate drivers for DOS AutoCAD and MicroStation. The cost? Under $600 for the 4MB version thanks to new Cirrus Logic graphics chips and cheaper-than-VRAM memory.
Phone: 800/727-7426.

Diamond MultiMedia announced a 1-slot, 2-monitor card, the Diamond Fire GL 2000, with more raw-image-processing power than Appian; delivery was due last month. It uses the 3Dlabs GLINT Delta accelerator; the 4MB VRAM/8MB DRAM configuration (1600 by 1200 per monitor) goes for $1,995. You get Windows NT/95 support, OpenGL, and Heidi (for 3D Studio).
Phone: 800/468-5846.

ELSA Data Communications showed its new GLINT-based GLoria PCI 2D/3D graphics accelerator board for Windows 95 and NT, too. The on-board accelerator can handle OpenGL, Direct 3D, ELSA POWERiib, and Heidi. It includes display list drivers for AutoCAD and MicroStation DOS as well as Windows versions. You can use two cards for dual monitor setups—but the solution is pricey at $1,999 per card with 4MB of 3D DRAM and 4MB of VRAM.
Phone: 408/935-0350.

Of course, for real action, nothing beats a Silicon Graphics Onyx—apparently the most powerful computer ever shown at A/E/C Systems. For complex visualization tasks such as ray-traced photorealistic animations, the new InfiniteReality Onyx line is up to 100 times faster than the previous record holder, the Onyx RealityEngine. It can handle 200MB a second of incoming image data, and output full-motion video.

The tab starts at more than $200,000 (single-processor i-Stations start at $125,000 and the Indigo IMPACT series at under $30,000). But conferees were marveling at the machines -- and planning to buy an Onyx-class model once the price comes down to $10,000 in five years or so. Expect some service bureaus to consider such high-end marvels soon.
Phone: 415/960-1980.

Printers and graphics adapters kept pace. Intergraph booth-minders were excited about the firm's Intense 3D line of graphics accelerator cards. This is the first time Intergraph has offered the cards for sale separately, apart from its TDZ line of 3D graphics workstations. The cards come with OpenGL and Heidi drivers, hardware and software for texture-mapping, and processing options. Intergraph claims higher processing speed than GLint-based cards. The price starts at $2,499 with 16MB of SDRAM; Intergraph expects to be selling them directly and through OEMs.
Phone: 800-763-0242.

Inkjet plotters

Encad showed its CADJET 2 E-size color inkjet plotter at A/E/C, with new low $2,995 price (including roll feed and automatic cutter). But the crowd-pleaser was the firm's NovaJet series with huge 500 ml ink reservoirs capable of reproducing photorealistic art with full ink coverage, rather than typical "line art" CAD drawings. The largest in the line is the new NovaJet Pro 50, which uses 50-in.-wide paper.
Phone: 800/453-6223.

CalComp set up its new TechJET 720c plotter in a suite for private showings. The D- and E-size TechJET series can plot at 720 dpi in monochrome and 360 dpi in color —the highest resolution of any wide-format inkjet plotter. The plotters, meant for CAD drawings that use some color, use either a high-capacity (44 ml) black inkjet head, or a four-color head with 5 ml each of cyan, magenta and yellow, and 9 ml of black. Prices weren't final at press time, but CalComp has been pricing aggressively
Phone: 800/932-1212.

Hewlett Packard showed its new large format DesignJet 350C and 330 inkjet plotters.
Phone: 800/851-1170.

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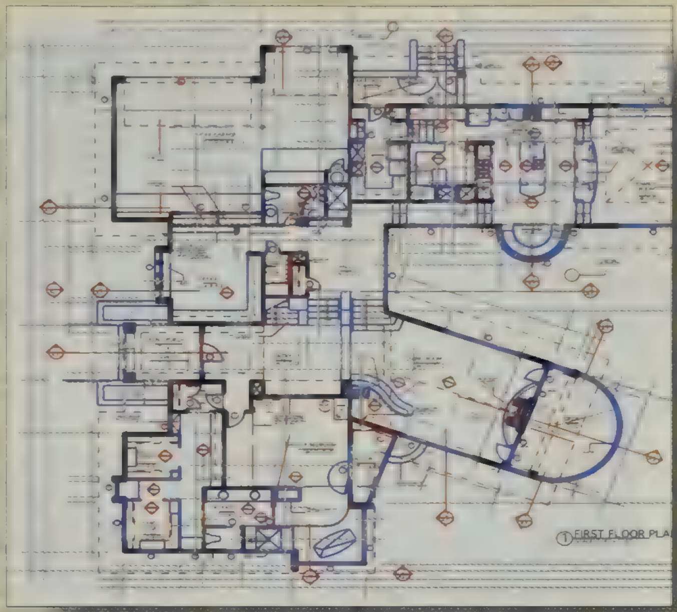
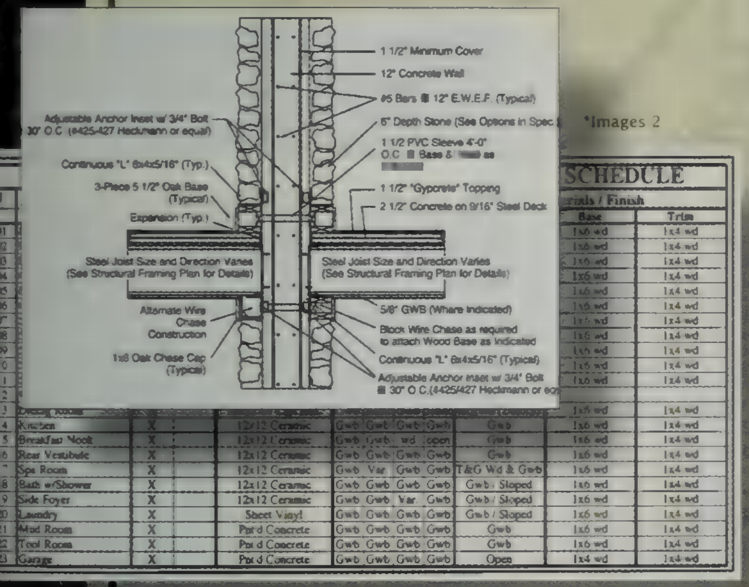


*Image 1



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3-Piece 5 1/2" Oak Base (Typical)
1 1/2" "Gypcrete" Topping
Expansion (Typ.)
2 1/2" Concrete on 9/16" Steel Deck
Steel Joist Size and Direction Varies (See Structural Framing Plan for Details)
Steel Joist Size and Direction Varies (See Structural Framing Plan for Details)
Alternate Wire Chase Construction
5/8" GWB (Where Indicated)
Block Wire Chase as required to attach Wood Base as Indicated
1x6 Oak Chase Cap (Typical)
Continuous "L" 6x4x5/16" (Typical)
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Kitchen
Breakfast Nook
Rear Vestibule
Spa Room
Bath w/Shower
Side Foyer
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Mud Room
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Garage

*Images 2

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Charles Perrygo
Senior Systems Engineer
Swales and Associates, Inc.

MiniCad 6®

*Image 3

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*Image 1 · Courtesy of Francois Levy, Dick Clark Architects, Austin, TX
*Images 2 · Courtesy of Cameron Lacy, DCL Architects, Wayne, PA
*Image 3 · Courtesy of David Brunke, Herring & Trowbridge Architects, Herndon, VA

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Interior Options

152. Heavy-traffic wood floor

Timeless Series II is an acrylic-impregnated hardwood floor furnished as tongue-and groove, three-ply planks. Intended for commercial and institutional use, the floor is UL listed for slip resistance, and has a Class B flame spread (ASTM E-84). Color and finish are uniform throughout the top veneer layer, preventing visible marring from foot traffic. Available in five wood species (red oak, clear maple, tupelo, linden, and cherry) and any of 25 stain colors: architect Daniel L. Pacek selected linden wood in blue and accents in natural-finish maple for a Boston optical store (right). 610/353-8801; www.permagrain/com/home (Web site). PermaGrain Products, Inc., Media, Pa.

153. Custom-look wall treatment

Marlite's new Modules interior system uses three modestly priced substrates—medium-density fiberboard (MDF), birch plywood, and particleboard—to capture the appearance of custom woodwork. For direct-glue installation, the 2-ft-sq panels have tongue-and-groove edges that interlock to form their own "recessed" surround. Appearance options include a printed overlay on MDF, such as faux BrownSugar Birdseye or Tahoe Aingre, with a catalyzed melamine topcoat. Want a funkier choice? Try tinted plywood or particleboard. Pictured: an orange tint on particleboard; fasteners are decorative only. May be ordered as a solid face, or with pre-machined slots that hold display shelving. 330/343-6621. Marlite, Dover, Ohio.

154. Feathery broadloom pattern

Maestro departs from the traditional cabbage-rose hospitality carpet with a non-directional, random-color overprinted pattern "suggestive of plumage." Made with Ultron 6,6 nylon, the broadloom comes in eight colorways, each balanced between warm and cool tones. 709/517-0075. Pateraft Division, Queen Carpet, Dalton, Ga.

155. Commercial laminate flooring

A new line for Bruce, Traffic Zone Elite commercial flooring incorporates a photographically produced woodgrain, marble, or stone pattern laminated under an aluminum-oxide wear layer. Specifically for heavy-traffic spaces, the laminate floor is said to have better stain- and indentation-resistance than vinyl sheet. Traffic Zone comes in 7 5/8-in.-wide, 50-in.-long planks for "floating" installation. 800/841-4630. Bruce Floors, Dallas.

156. Multidirectional modular

A patterned-loop carpet tile in Antron nylon, Tree Bark has a sinuous, full-repeat-scroll pattern that will "seam up like broadloom" to conceal joints between the 18-in. squares. Thermobond construction is said to prevent delamination in even the heaviest-traffic hallways. An updated sampling program for architects and designers covers all Lees commercial modular and broadloom carpet. 800/523-5647. Lees, Greensboro, N.C.

157. Metallic/wood look/vinyl floor

A new Amtico pattern, Dazzlewood is described as a "visual illusion" that combines a naturalistic wood grain with a metallic luster. One of over 170 standard colors now available in this high-design resilient flooring, Dazzlewood comes in four strip widths. An unusual CAD-controlled cutting technology allows the producer to combine any colors into a custom-design format suitable for the most severe wear areas. Complete commercial catalog. 800/268-4260. Amtico, Atlanta.

158. Special-effect concrete

A system of coloring, patterning, and finishing techniques for cementitious flooring, Patène Artectura lets the architect turn plain gray concrete into a dramatic interior or exterior element. For existing and new slabs as well as thinset toppings, the product line includes integral colors, color hardeners, chemical stains, and tinted sealers, imprinted in Bomanite patterns or finished with standard broom, steel trowel, or other methods. 209/673-2411. Bomanite Corp., Madera, Calif.

159. Hardwood floor from bamboo

Made of strips cut from the stem, Plyboo flooring displays the node pattern characteristic of fast-growing bamboo. Botanically a grass, bamboo is nevertheless very hard, and will not shrink or swell. Developed by Dutch, German, and Chinese forestry scientists, Plyboo consists of three veneer layers laminated into 3 1/2-in.-wide, random-length boards. While a nail-down installation is permitted, floating-floor techniques are preferred. 315/687-7088. Plyboo America, Inc., Kirkville, N.Y. ■

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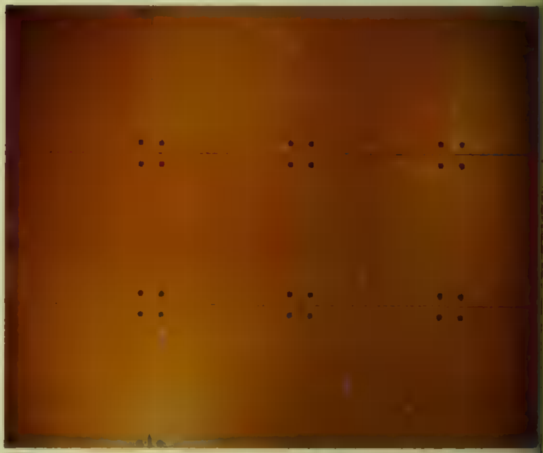

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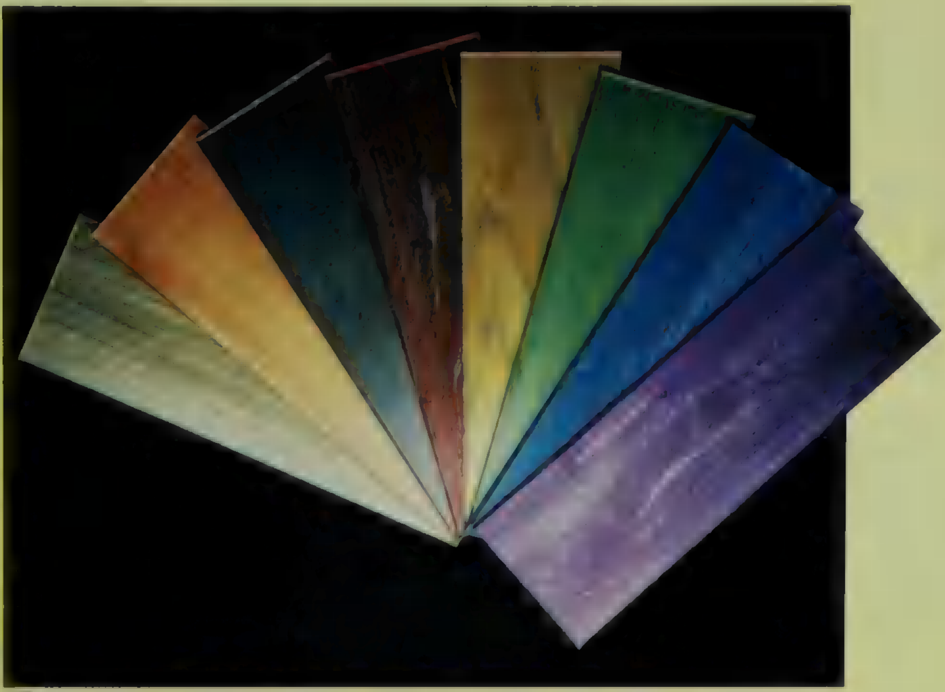
For more information, circle item numbers on Reader Service Card.

ew color, material, and texture choices expand the interior-design lette for commercial, hospitality, and retail environments.



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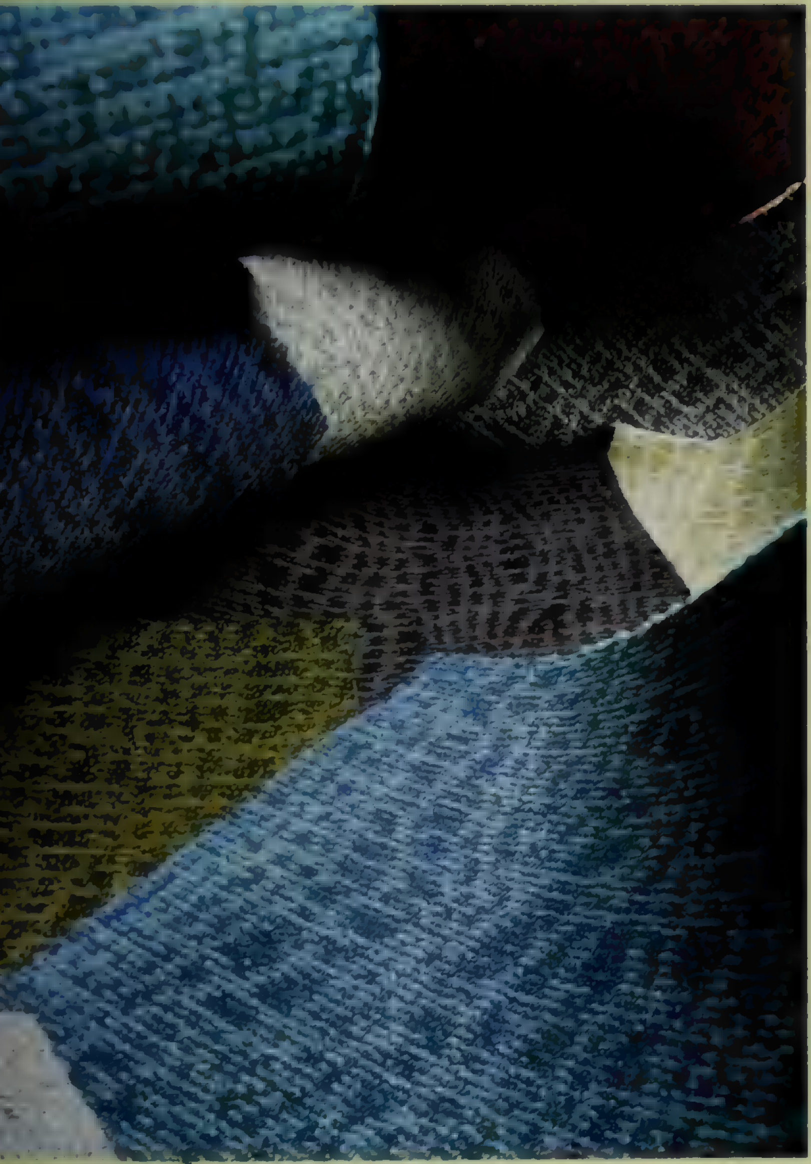

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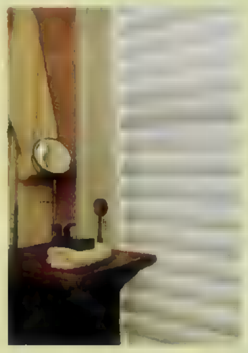
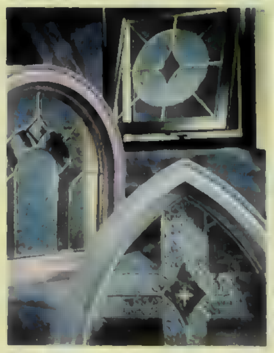
160. Restaurant-style hood
A new kitchen ventilation hood is deeper—27 in.—to extend effectively over larger, commercial-style stoves. Widths range from 30 to 66 in., with custom sizes and mounting configurations available. Centrifugal blower units are said to operate quietly and reduce the chance of duct fires; hoods come in stainless steel, brass, copper, and enamel colors. 214/235-5201. Vent-A-Hood, Richardson, Tex.

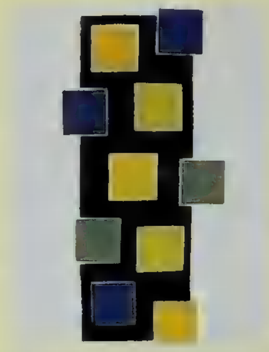
161. Porcelain-slab cladding
Fade-proof Top porcelain tiles in sizes as large as 3 by 3 ft can be used on facades at a substantial weight savings over the same dimension in natural stone. A system of clip fasteners and brackets—either fully concealed or partially exposed—fit into grooves in the back for hanging the panels; tiles can also be glazed into a curtain-wall assembly. 305/445-6433. Imola, Coral Gables, Fla.



162. Seersucker shading
Vignette Roman-shade-style window treatments, for both residential and commercial use, are available in less formal weaves such as an all-polyester seersucker with alternating flat and puckered texture. Panels can be specified in widths up to 72 in. Motorized operation, a new option, can be controlled by switch or hand-held remote. 800/937-7895. Hunter Douglas, Inc., Upper Saddle River, N.J.

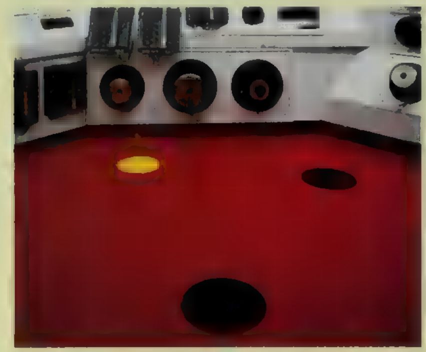


163. Decorative-shape windows
Kolbe wood windows can be ordered in some new shapes: circles, round tops, octagons, gothic arches, ovals, and squares, fixed or venting. Insulating glass is standard; decorative grilles and glazing are options. Exteriors can be specified in K-Kron, a baked-on coating that does not obscure architectural details of the window frame. 800/955-8177. Kolbe & Kolbe Millwork, Wausau, Wis.

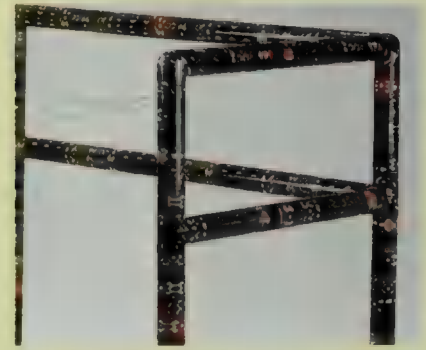


© Eugene Weisberg

164. Area rugs
Christine VanDerHurd sculpts her cut-and-loop wool-pile rugs in some unusual shapes, grouped under a common design theme—this year, it is The Dance. Shown: Square Dance, with pre-cut sections that can be lifted to show the floor underneath. All carpets and rugs are made in custom colors, sizes, and shapes for retail, residential, and corporate settings. VanDerHurd, New York City.



165. Studded sheet vinyl
A heavy-duty flooring made in rolls 6-ft wide by 60-ft long, Moonwalk comes in bright primary colors and metallics and an embossed pattern o smallish disks. Installation pictured has accent circles of black and yellow set into a vibrant red field; custom colors and patterns are said to be cost effective for orders of 800 yards or more. 800/832-7111. Lonseal, Inc., Carson, Calif.



166. A rail of a different color
Tattoo is a vivid multicolor finish option now offered on all Brass Smit metal products, including railings, pedestrian-control standards, and partition posts. Created by a unique process that prints directly onto three-dimensional objects, patterns include leopard skin and tapestry—a choice of 12 designs—with a baked-on clear top coat. 800/662-9595, x244. Brass Smith, Inc., Denver.

167. Sign rock
Made using urethanes and artificial-rock replication technology developed by Futura Coatings, the Identa-Rock is a realistic, fully weatherproo "boulder" that carries an aluminum address plate. "Rock" can be ordere in three sizes, up to 30 by 25 by 19 in signage can be black, red, or green, with gold letters. Priced under $200. 419/626-2002. Ultimate Industries, Inc., Sandusky, Ohio. ■

Short Takes

Fibreboard expands
A source of building products such as Pabco structural fireproofing, Fibreboard Corporation has bought Stone Products, also a California firm, for about $52 million. Napa-based Stone Products makes simulated stone under the name Cultured Stone.

Also in an acquisitive mode, Triangle Pacific of Dallas, owner of four flooring-product lines including Bruce Hardwood Floors, completed the purchase of Hartco Flooring Co., Knoxville, Tenn.

Energy-efficient home sites
An interactive guide to the Earth Smart home, already built in Oregon, is offered on Portland General Electric's new Web site. The innovative building design incorporates energy-efficient, environmentally benign structural materials, finishes, hvac equipment, and naturescaping concepts. The visitor can walk through the home, clicking for details on each component. The utility also offers an excellent Residential Resource Guid (print) to "Earth Smart" building components. At: ww.pge.online.com (Web page); 800/722-9287 (phone).

Another great eco-source: Environmental Building News, with a new site: www.ebuild.com (Web page). ■

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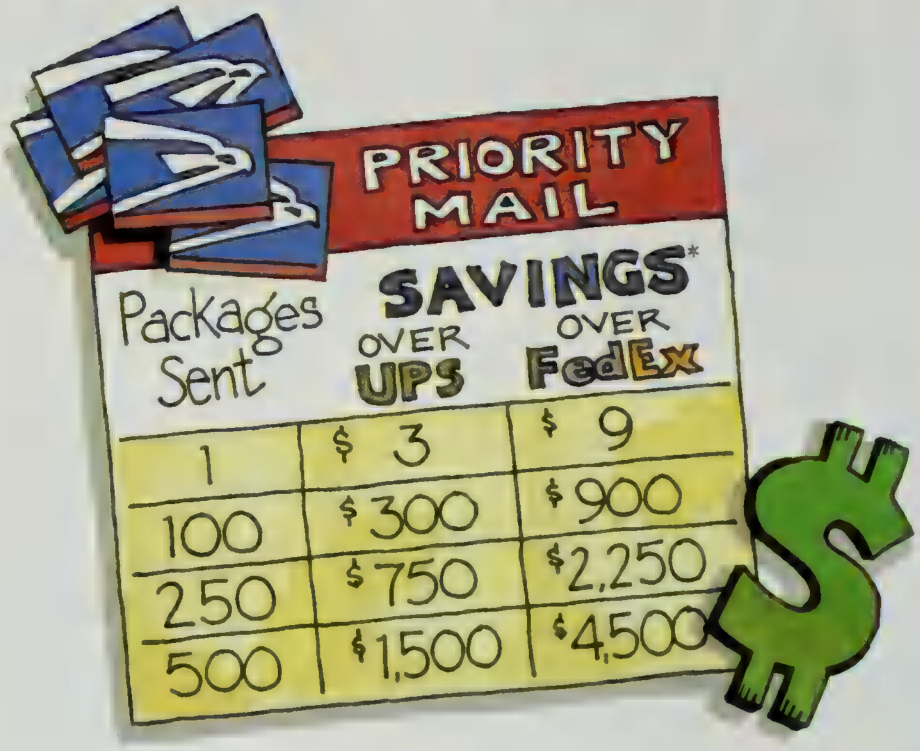

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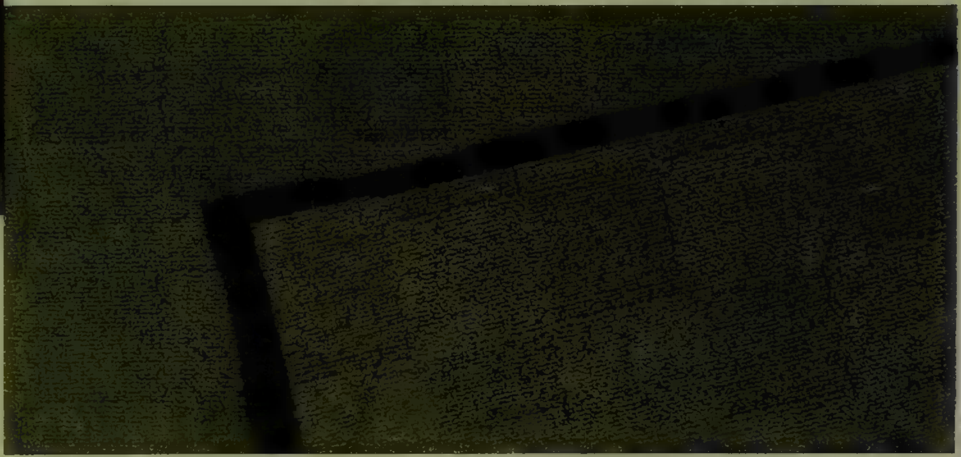

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Winning design team shown above (L to R): Armando Iarussi, Debbi Baron and Barbara Barry (seated).
Photography © Erhard Pfeiffer 1995 (installation) and © Don Rank (product).

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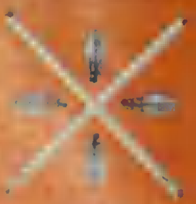

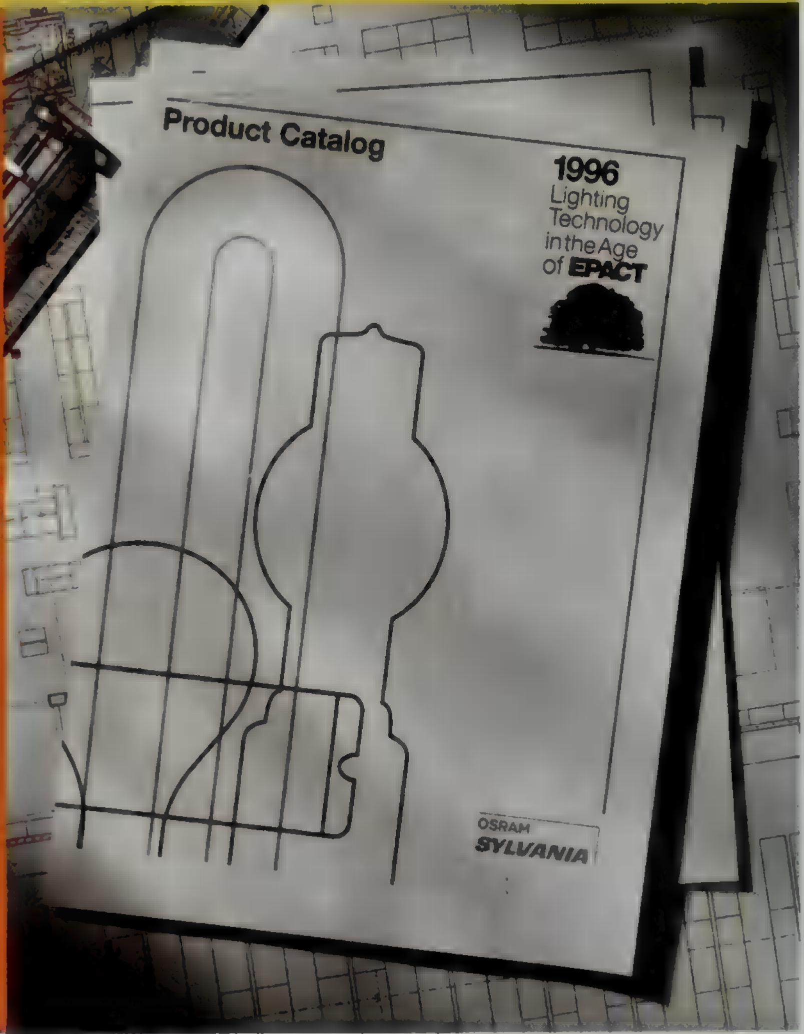
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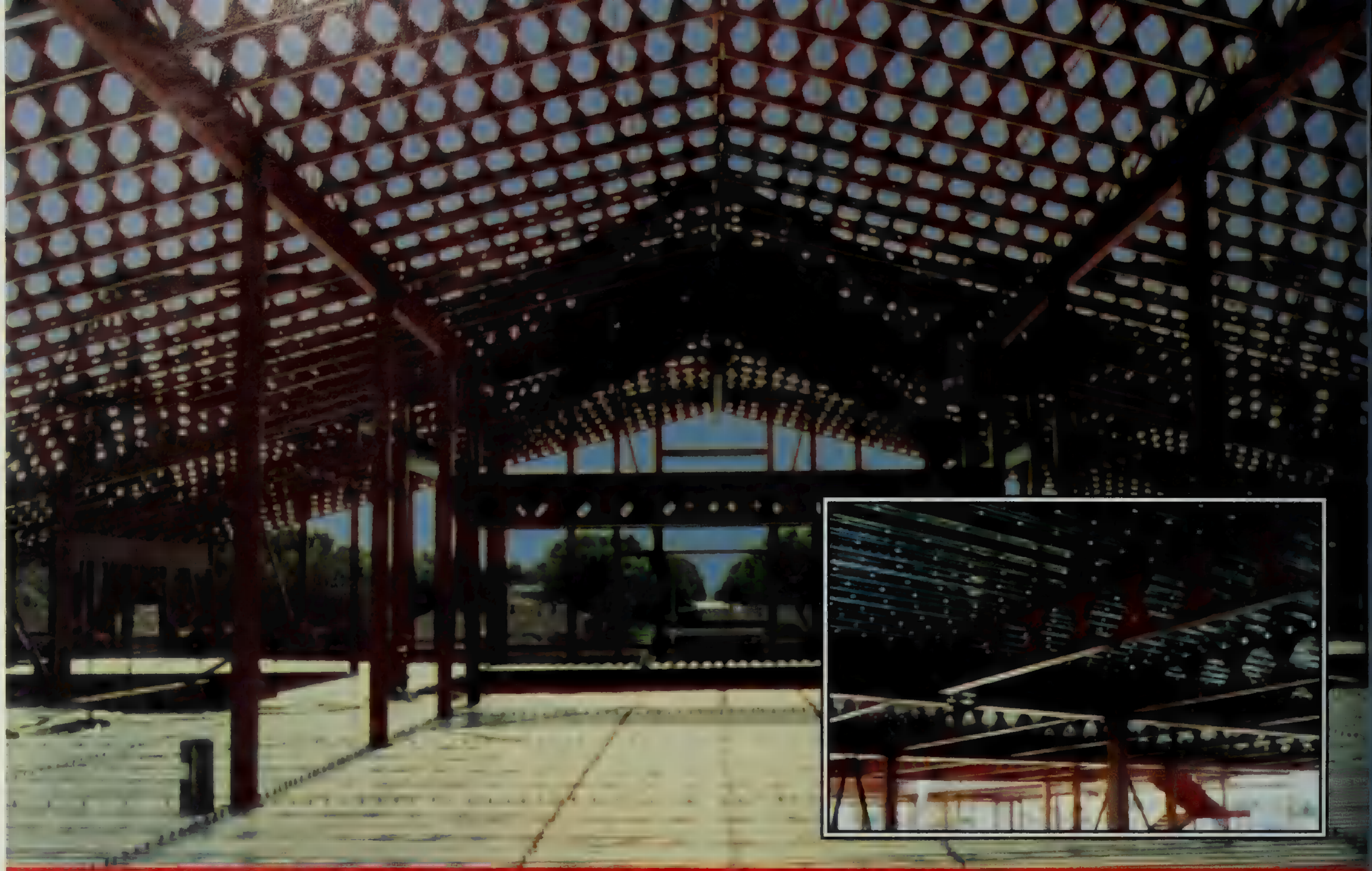

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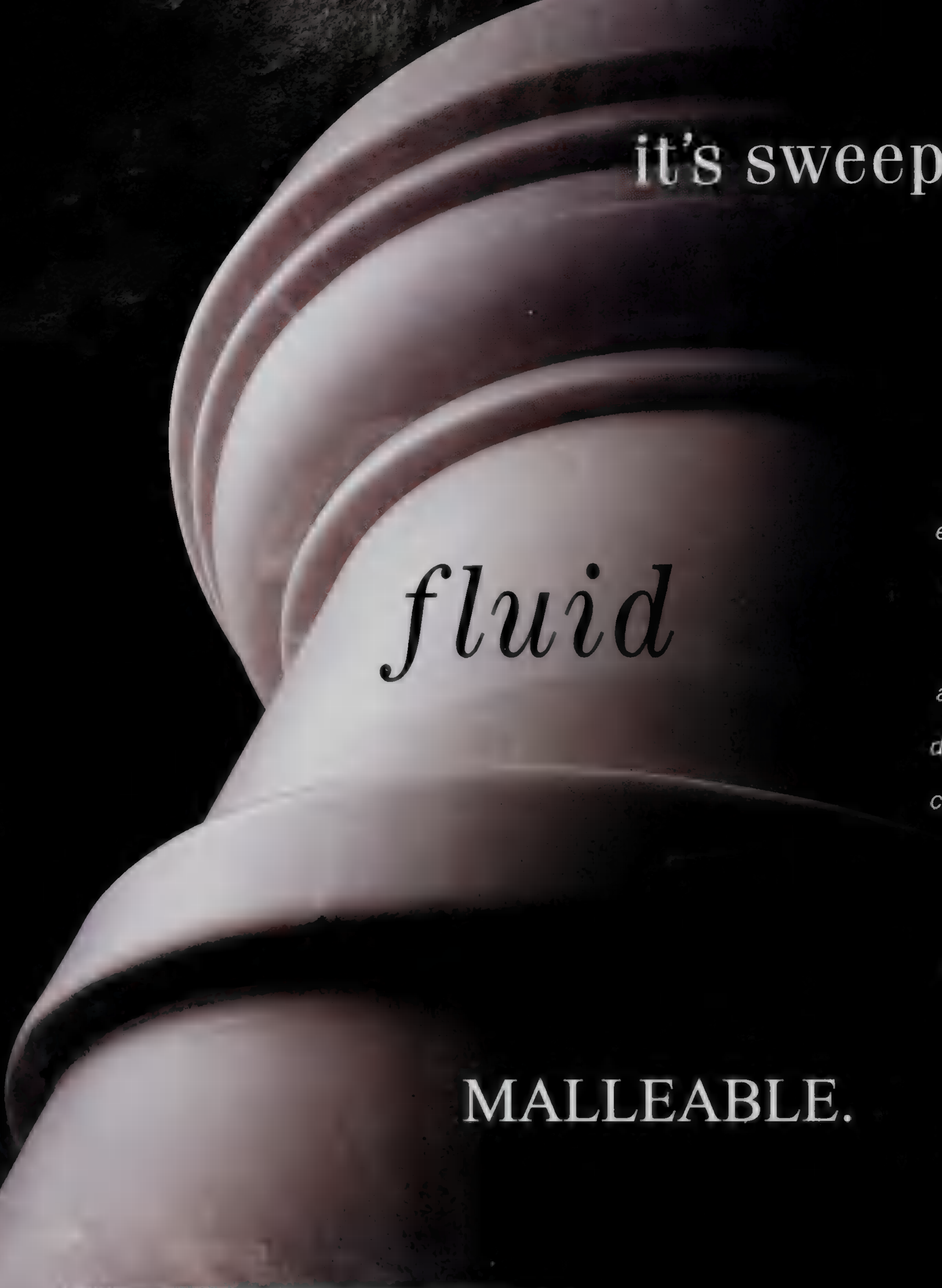

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Building Types Study 741/Interiors

We could all learn a lesson from Morris Lapidus, who this fall turns 94 and also celebrates the publication of his *second* autobiography, aptly named *Too Much Is Never Enough.* Lapidus teaches us not only about survival, but also about conviction. With the 1996 presidential race currently in full swing, it's become conventional wisdom that candidates for public office change their views to meet the latest public-opinion polls—"waffle" is now firmly ensconced in our vocabulary as a verb. Not for Lapidus.

Beginning his career as a draftsman during the Depression, he formed his own firm in 1943, commuting between New York City and Miami Beach. From then on, Lapidus carved out his own niche primarily as a designer of shops and hotels. As correspondent Beth Dunlop writes in the introduction to the portfolio of his decades of interiors work (pages 92-97), from the early years of his practice he spurned the popularized teachings and esthetic of Mies van der Rohe and Walter Gropius, whose designs he termed "cold and clinical." Architecture, Lapidus maintains, should have popular appeal. "My basic theory," Lapidus wrote in 1987 of his life-long pursuit, "is based on the fact that in earliest prehistoric time, primitive man sought to adorn his cave with phenomenally beautiful wall paintings and to adorn himself with shells, feathers, and flowers. The basic human instinct (the love of adornment) is a part of our genes."

Accused of going too far into architectural showmanship by other architects, critics, and, at times, clients, Lapidus kept going even further, and going and going and going. History will be the ultimate judge of his work—some buildings, like the Fontainebleau Hotel in Miami Beach of 1954 are now acknowledged as breakthroughs. Today, however, we can certainly evaluate the man as true to himself—an accomplishment above all others. *Karen D. Stein*

nufacturers' Sources
ed on page 116

Baywatch or Workplace?

f/X Networks Corporate Headquarters
Los Angeles, California
Fernau & Hartman Architects

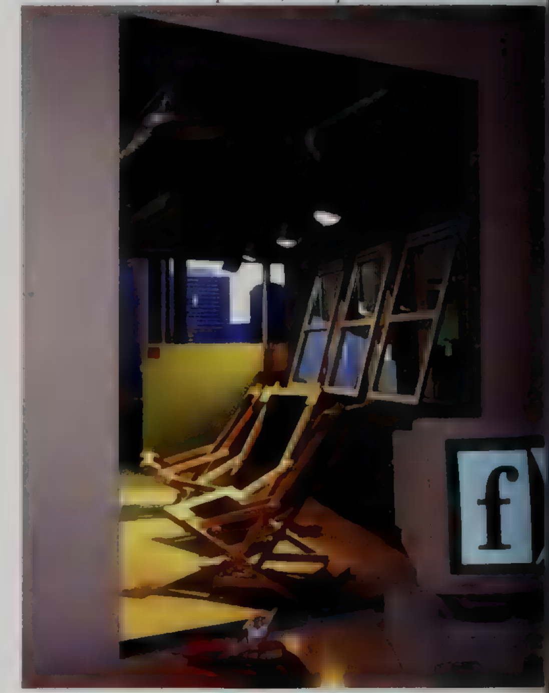
The wide-open space is the thing that surprises one most when entering the floor of the Los Angeles office of the cable network f/X—it is deliberately spacious. Out of the latest thinking about how companies work comes the idea that they need this empty space. "It's about communication, not cubicles," says Richard Ross, f/X's senior vice president for production and development. "We are designing wasteful space now, because that's where people talk to each other," says principal Richard Fernau, of the Berkeley-based firm of Fernau & Hartman. In an era of lean management, flexible work teams, intensive use of communication technology, and the realization that an office is as much a place for communal, "real-time" strategizing as it is for individual performance, companies such as f/X are actually asking designers to break open the box, and leave it open. It is to Fernau & Hartman's credit that they have grounded what could have been too playful a place with real materials and real objects.

To deploy such expressive emptiness, however, they needed to find the room: "You have to pay for public space, especially if it's not just going to be an icon at the end of a path," says Fernau. Luckily, f/X, a client for whom they had already designed two previous offices, had a reasonably radical notion of how their offices could be organized: all the managers sit in minimal cubicles that crowd around the core, while the support staff occupies a world of light-colored plywood stretching all the way to the windows. "It's a great equalizer," says Ross. The real work of the company takes place in seven eccentric objects that serve as conference rooms, or in the chairs, picnic tables, and rolling blackboards that occupy the left-over spaces between the grid of desks and the conference rooms.

Using the landscape as a cue, Fernau & Hartman divided the floor into three areas: beach, hills, and lot. "I wanted the users to be able to register where they were by the outside," says Fernau. The west side faces the Pacific Ocean a few miles away. Here temporary workers or visitors from the New York City office sit at fold-out "Murphy desks" that Fernau likens to "sleeping on the beach." On the opposite side of the floor, a concrete ramp leads up to a small conference room, creating a sense of tectonic uplift that recalls the nearby hills. On the south side, a metal shack seems to make the Twentieth Century Fox movie lot next door, which is continually under construction, into an extension of the daily programming of the cable shows. A fourth metaphor seems to be a reference to the executive niceties of the surrounding office complex, reconstituted in the grand, north-side executive conference room.

"We like to think of this place as very L.A.," says Fernau, and sometimes the place looks more like Baywatch than like a workplace. Everyone's day starts at the "lifeguard station," a conference room, mailroom, and lunchroom that faces Ross's office. For Fernau, this is a place "where you check the conditions with the lifeguard before you hit the beach." For Ross, it's a control post: "I watch my assistant go through her day, I know how often everyone gets coffee, and everyone knows what I am doing." Here, Big Brother meets the boardwalk and perhaps makes things just a little less than mellow than a day at the beach. *Aaron Betsky*

© *Richard Barnes photos, except as noted*

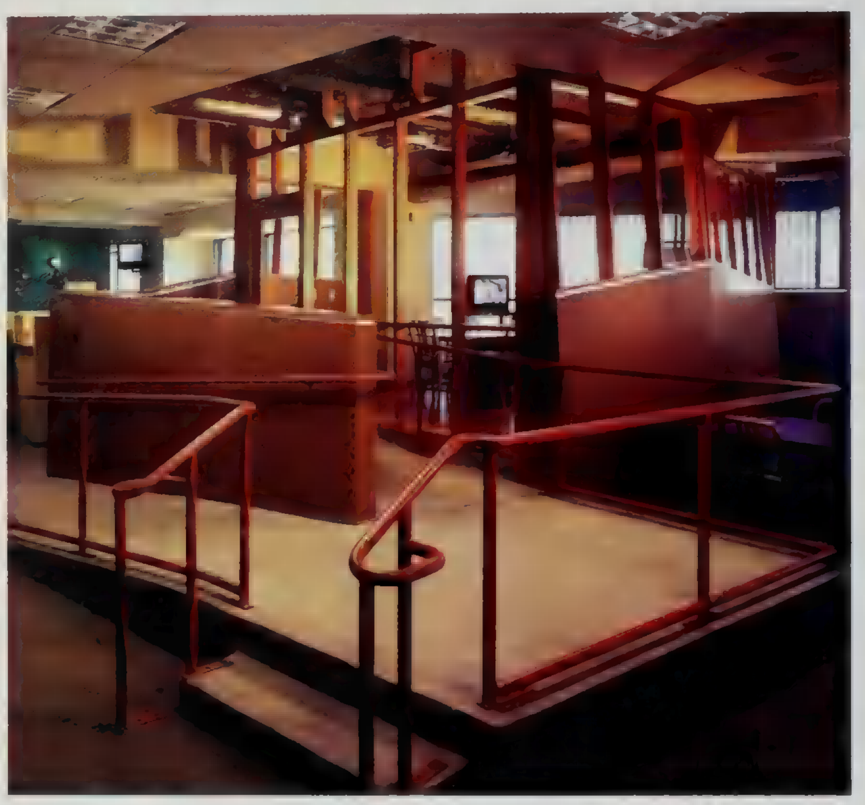


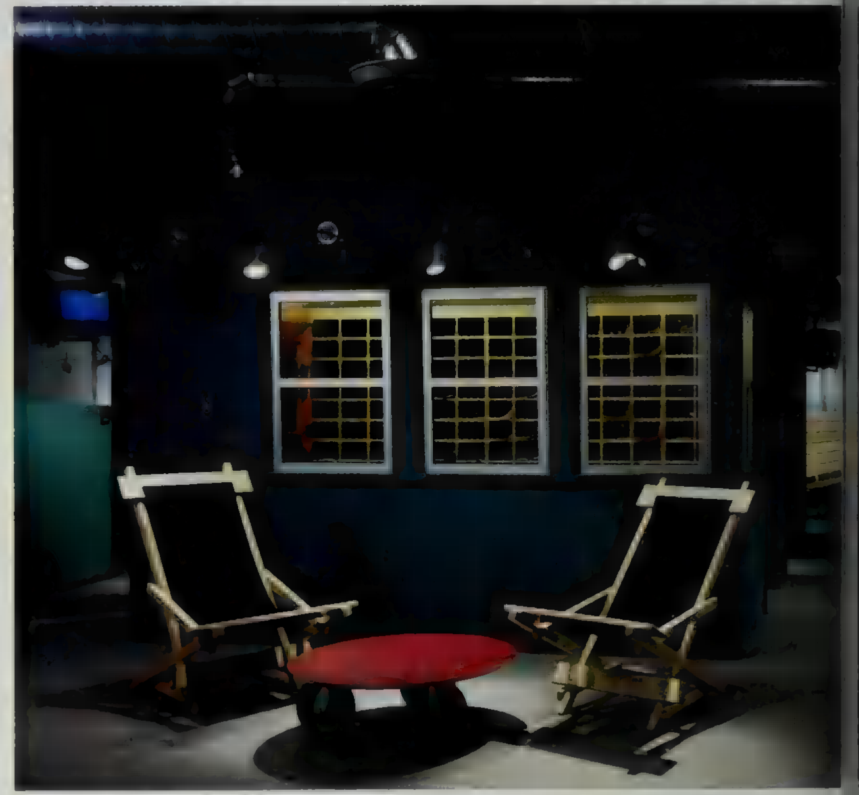
© *Courtesy Fernau & Hartman Architects*

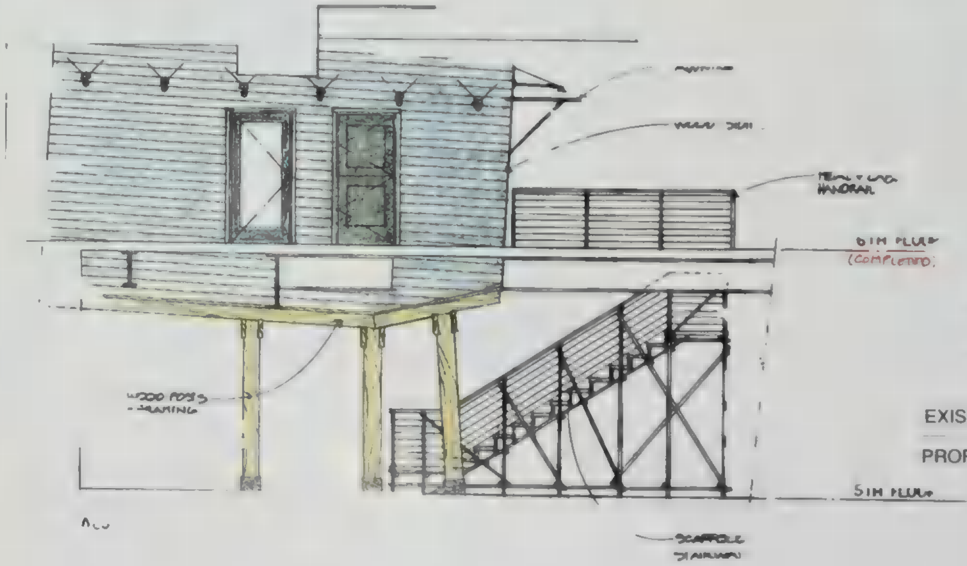
Tilted planes angle up and out from the confines of offices (top) to bring in light, views, and memories of places of informal conversation such as cafes, diners, or the beach. Colors and contours serve to soften both institutional and structural edges, while serving as "wayfinders" in the expanse of offices.

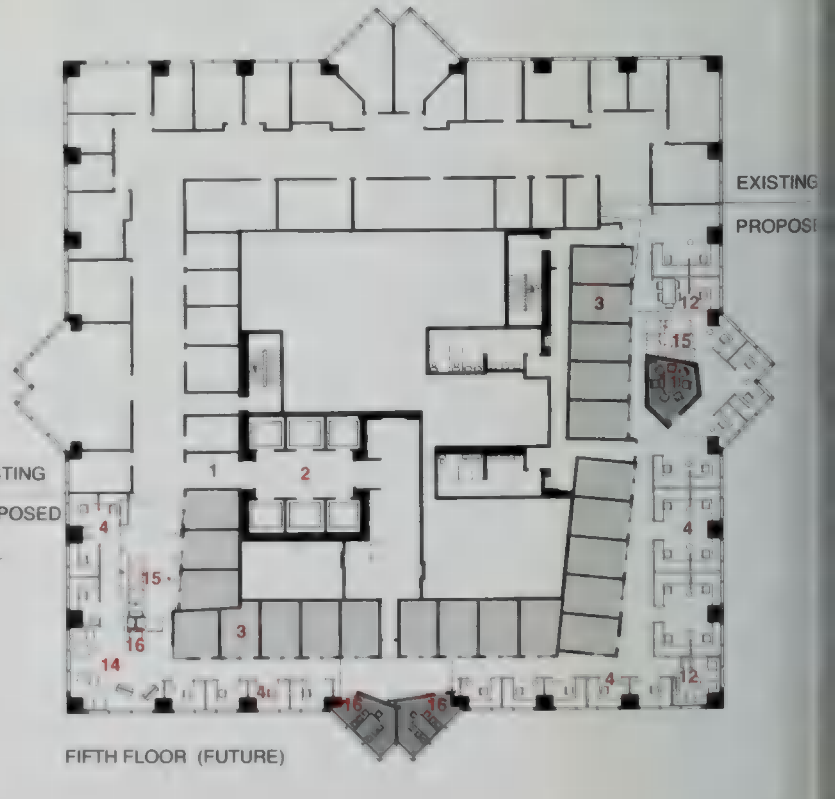
fX

By "peeling the core," Fernau & Hartman found open space to play out their special effects. The offices of f/X currently take up one floor of the "Die Hard" building (the Fox Tower), and they may expand to half of a floor below in the future. Between the dense core and the parameters of the building, references turn into real materials when they solidify into the conference rooms: on the north, corporate power asserts itself in poured-in-place table legs and the flying wing of a hung indirect lighting fixture (previous page). The "hill" (this page, left) provides handicap access to a room whose skeleton refers to Rudolf Schindler's hillside houses; the lifeguard station (this page, right) looks like a beach shack. The "sweat hut" (opposite left) evokes a sauna; the minimal storefront assembl







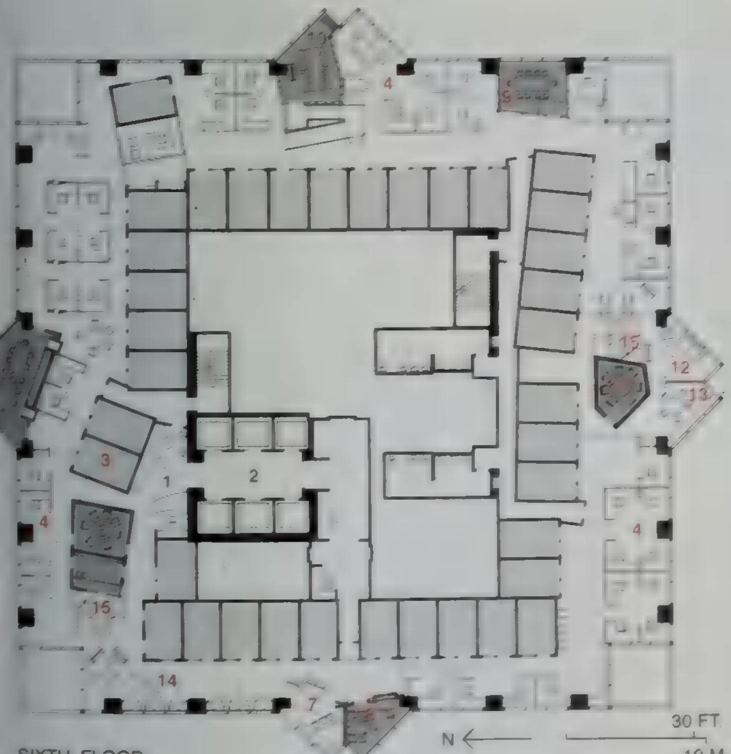


FIFTH FLOOR (FUTURE)

ing the neighboring movie lot is page, right) is like the scaf-ding for a corporate enclosure t never arrives.

edits

Networks Corporate adquarters s Angeles, California **chitect:** *Fernau & Hartman chitects—Mark Macy, project chitect; Richard Fernau, ura Hartman, Turk Kauffman, Mark Macy, David Kau, Susan Stoltz, design team; Tom Powers, Scott Donahue, Sunshine Chen, Geoff Holton, Alice Lin, Jane Lee, Tanya Davidge, project team* **Consultants:** *John A. Martin & Associates (structural); Peters & Myer Illumination Design Collaborative (lighting)* **Contractor:** *Gordon & Williams*



SIXTH FLOOR

1. *Reception area*
2. *Lobby*
3. *Typical closed office*
4. *"Murphy" workstations*
5. *"Lifeguard" conference room*
6. *Executive conference room*
7. *"Diner" conference room*
8. *"Murphy" conference area*
9. *"Storefront" conference area*
10. *"The hill" conference area*
11. *"Sweat hut" conference area*
12. *Conference area*
13. *Research areas*
14. *"Beach" conference areas*
15. *Future stairway to fifth floor*
16. *"Rocks" conference room*

A Firm of Many Visions

Divergent projects can come from the same architectural office. Scogin Elam and Bray have designed two in Atlanta, a spa and an art gallery, with dramatically different results.

The architectural projects of Scogin Elam and Bray capture Atlanta's spirited duality: like the city, they are serious and at the same time exuberant; their buildings and interiors mark the landscape in a signatory way.

Mack Scogin, Merrill Elam, and Lloyd Bray, who founded a joint practice in 1984, seek additional meaning in each project by thoughtfully setting buildings in tune with place, client, and use. A freedom of invention and joy in exploration often marks their work, a kind of playfulness in the highest sense. "We are always looking for cues that set a project apart," says Elam. "We think that it is very difficult, that there are no formulas, that every place in every sense is unique."

Ordinary objects, reconsidered and redeployed, linger in the imagination from earlier projects—a satellite dish converted into a symbolic chandelier or full-height telephone poles used as sculptural anchors for a residential deck. Some gestures (mottled metal walls, curvilinear canopies) can seem zany at first blush; others, such as the High Museum at Georgia Pacific Center, eminently restrained. All explore the genius of materials—texture, heft, or shine.

While whole architectural projects dominate the firm's roster of works-in-progress, two recent interiors in Atlanta illustrate directions in their contemporary work. One, a commercial day spa, creates the illusion of amplitude in a confined place, enriching an otherwise banal space with an ambiguous quality. The second, a museum gallery, perches lightly within a Beaux-Arts Neoclassical hall, deferring to the existing architecture and a collection of African-American art. Both projects had extremely limited space and budgets.

The following renovations, while small-scale and divergent, demonstrate the transformative power of a second, hard look at interior space. *Robert Ivy*

An Architectural Plan That "Uplifts" the Art

A treasury of African-American art fills the
gallery at Clark Atlanta University with co
and life. The single, expansive space, origin
ly designed by New York architect James
Gamble Rogers in 1931 as a library reading
room, has been pared down and spruced up
The architects' respect for the original spac
shows in the details: new double-glazed
windows by a local craftsman replicate the
originals; new hardwood floors shine underfoot. Large murals in an adjoining vestibule
by artist Hale Woodruff have been restored

Director Tina Dunkley worked for a decade
in the hope of seeing a new gallery. She say
the architectural work "uplifts the art we
possess." A single intervention, an overscal
steel trellis, provides a framework for the c
lection. Walls and lighting tracks are flexibl
able to shift for subsequent shows. The wh
trellis, while grand as the space, steps off t
walls, creating expansive vistas from one e
of the space to the other. A gift shop inserte
into the larger space intrudes only slightly
and will be replaced in a subsequent phase.

Credits
Clark Atlanta University Art Gallery
Atlanta, Georgia
Architect: *Scogin Elam and Bray Architec*
Inc.—Mack Scogin, Merrill Elam and Lloy
Bray with Martha Henderson Bennett,
Carlos Tardio, Elizabeth Morris, Denise
Dumais, Jeff Atwood, and Kathy Wright
Engineers: *Uzun & Case (structural);*
Newcomb and Boyd (mechanical/electrical
Ramon Luminance Design (lighting)
General Contractor: *The Flagler Compan*

© Tim Hursley photos

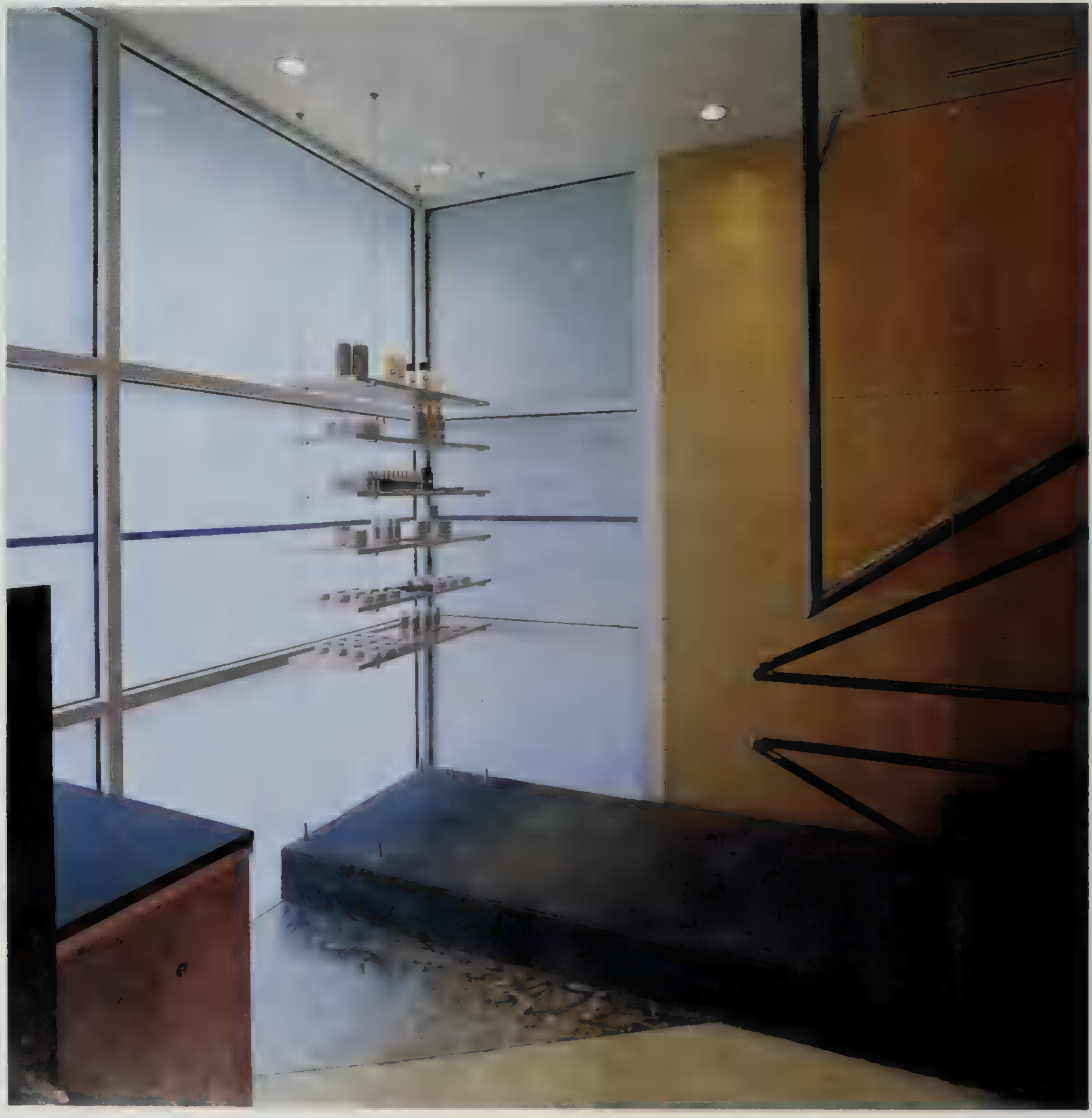
A Place to Scrub, Rub, Oil, Wax, Massage, Trim, Cleanse, Pamper

A hidden oasis always surprises, and there i nothing on the outside of the generic 1970s-era pitched-roof mall to prepare a visitor fo the Don and Sylvia Shaw Salon and Spa located inside. It is serene, meditative, and douses the visitor with space and light.

Owner Shaw and his wife know their customers' needs. "We've been in the salon business for 35 years," he says. "People are trying to take control of their lives. We give them a day of pampering." The actual spa footprint is tiny, only 2,050 sq ft on two floor "We had to squeeze a large program into a tiny space," says Elam. The spa, located adj cent to the Shaws' popular salon, has dual offerings: watery ablutions, including steam baths and full body massage on the first leve a "Spa Express" on the second for quick trips, facials, and manicures.

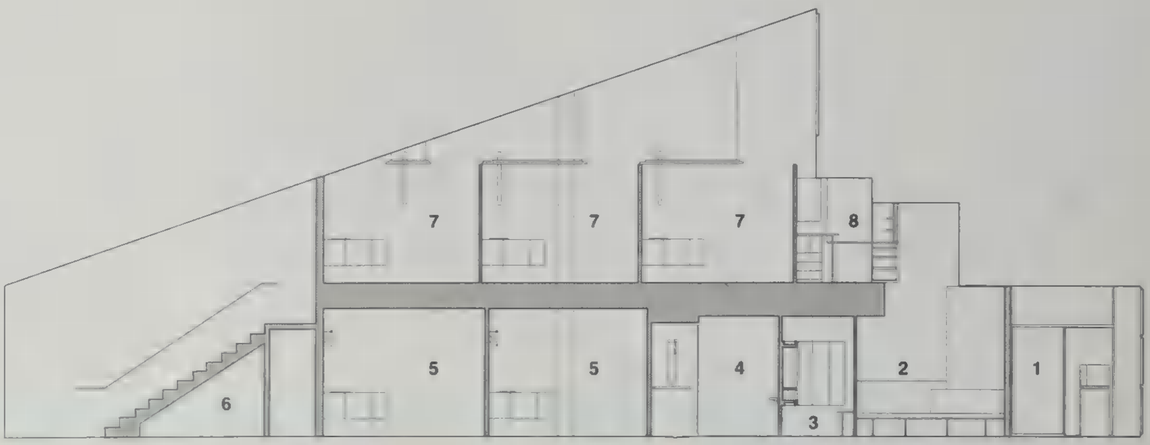
The doors inside the spa are sealed and the mood is meditative and solitary. Elam cites the customer's perceived vulnerability durin the spa experience. Don Shaw is more direct He expected private spaces that would insulate noise from the massage and active bathrooms. "I didn't want any gyp board walls there."

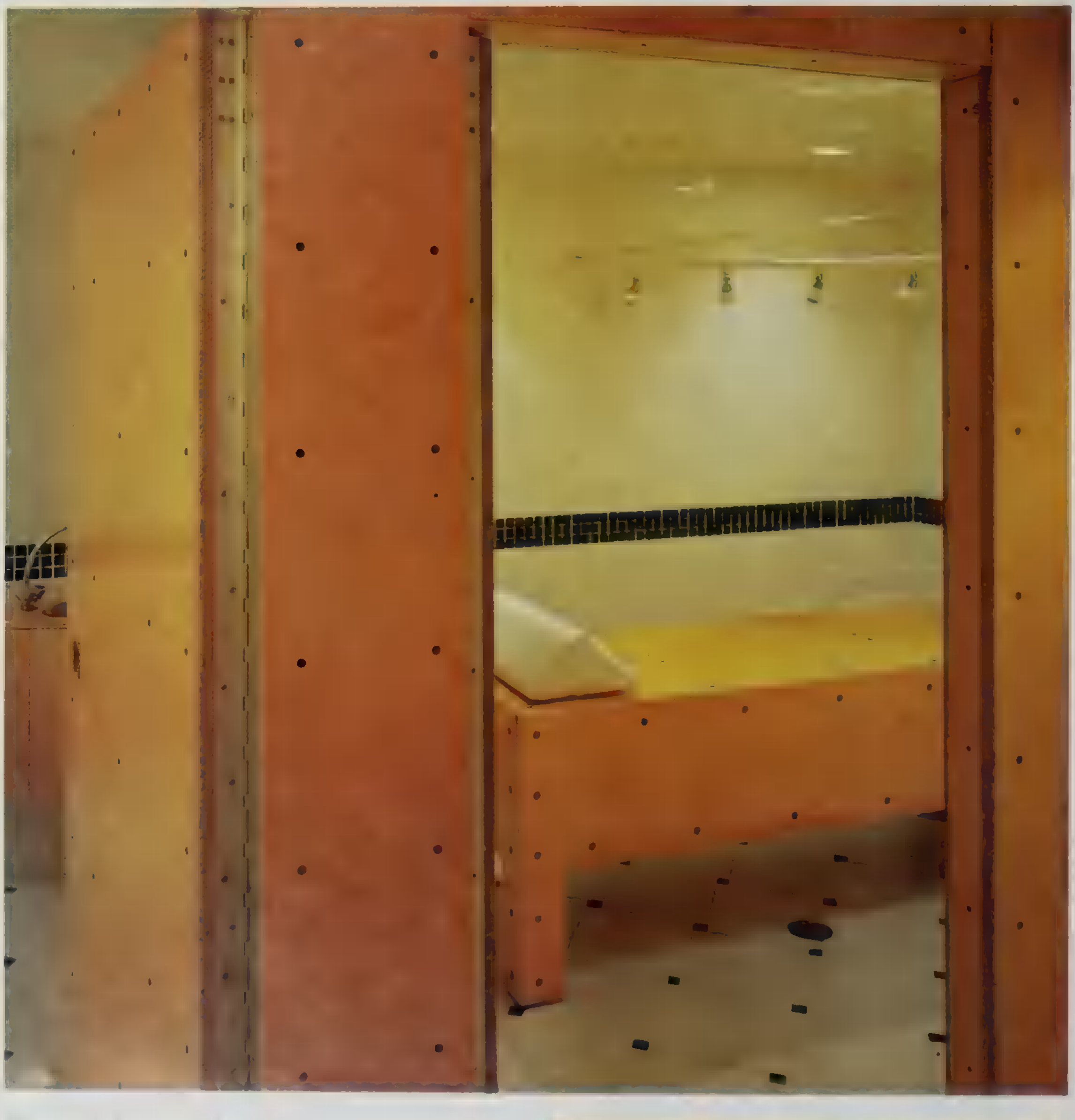
Stepped glazing, the interlocking geometry of floors, and walls, and ceiling, glazing and lighting effects combine in a spatial tour-de-force, an essay in which technique conquers limitations by raising questions. What lies behind a translucent wall? What lies upstairs? Textures and materials carry the formal interplay further. Materials like concrete are rough; ceramic tile, smooth; multiple-layered plywood doors, warm; steel rails and struc-



A skeletal metal system outlines the stair rail with raw structure, and etched acrylic and plywood panels line opposing walls (right). The entrance to the spa through the salon (top) leads to the translucent reception area (above).

1. Reception
2. Parlor
3. Lockers
4. Steam/shower
5. Spa room
6. Laundry/exit stair
7. Facial
8. Make-up/manicure





Continued on page 82

Continued from page 80

tural accents, cool. In a small space, the sm details count. Continuous piano hinges on open doors offer structural stability and a ribbon of texture to open doors. Exposed plywood layers of walls and doors can be counted like rings on a felled tree. Capped bolts add rhythmic bumps to interior walls. Joints between interior panels are exposed joinery shows.

Some effects were experimental. Frosty wa resulted when the architects sanded acryli panels into a blurred opalescence. Achieve on a tight budget, the spa strains in certain spots. Despite admitted shortcomings such concrete finishes, the spa seems expansive beyond its true size, augmented by light an space. Owner Shaw is pleased. "You'd think was 3,000 or 4,000 square feet," he exults.

Credits

Don and Sylvia Shaw Salon & Spa
Dunwoody, Georgia
Architect: *Scogin Elam and Bray Architec Inc.—Mack Scogin, Merrill Elam, and Llo Bray with Martha Henderson Bennett, Kat Wright, Elizabeth Morris, and Dustin Lindblad*
Engineers: *Palmer Engineering Company (structural); Ramon Luminance Design (lighting)*
General Contractor: *Farrar and Associat Dowlen Lloyd (Cabinetwork)*

Plywood doors and walls in the ceramic-tiled-spa area are protected by phenolic resin-impregnated film (above and right). Stairs are sealed, pigmented concrete, exposed to the first floor corridor (opposite).

The Science, Industry and Business Library
The New York Public Library
New York City
Gwathmey Siegel & Associates Architects

Next Century's Library—Today

© Peter Aaron/ESTO photos

"A prototype of the 21st century library," is how Paul LeClerc, preside of The New York Public Library (NYPL), describes the new Scienc Industry and Business Library (SIBL), located in the former B. Altman department store in midtown Manhattan. Chairman emerit of the Library's board of trustees, Marshall Rose, considers it "a to package" of research facility and circulating library, and "the vision the next century." Charles Gwathmey of Gwathmey Siegel & Associ ates, the architectural firm responsible for the transformation of th former retail space, calls it "revolutionary—in preconception and p ception."

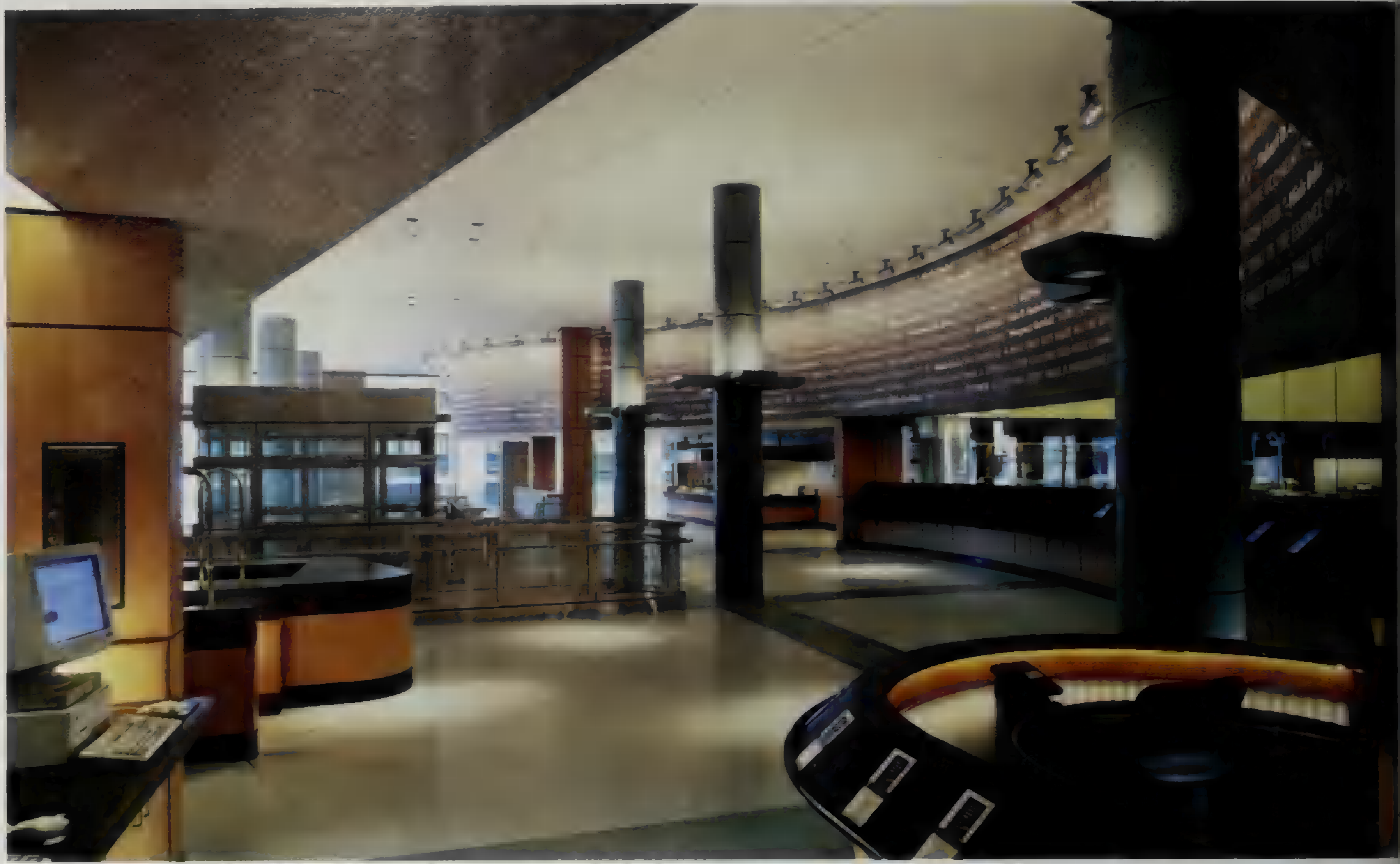
That's heady stuff considering the future is largely unknown. But i creating this new, $100-million facility, both client and architect sou the impossible—a look into the future. Their prediction, after years research, world-wide library visits, and facility programming: book are here to stay and so is technology as a research tool. As a result, SIBL amply provides for both: a collection of 1.2-million volumes (a additional 50,000 books circulate) and, among other computer-base resources, an electronic information center of some 100 workstation that allows library patrons to access internal and external informati networks. (Patrons inexperienced in computers can take free classe at the library's training center.) Says LeClerc of the dual approach: "The library of the next century depends on overlapping [resource] pools. Print and technology are compatible." His assertion is, at lea true in the present. Since opening its doors to the public on May 2, percent of the library's users have employed some type of technolog in their research, while two-thirds have requested hard-copy materi

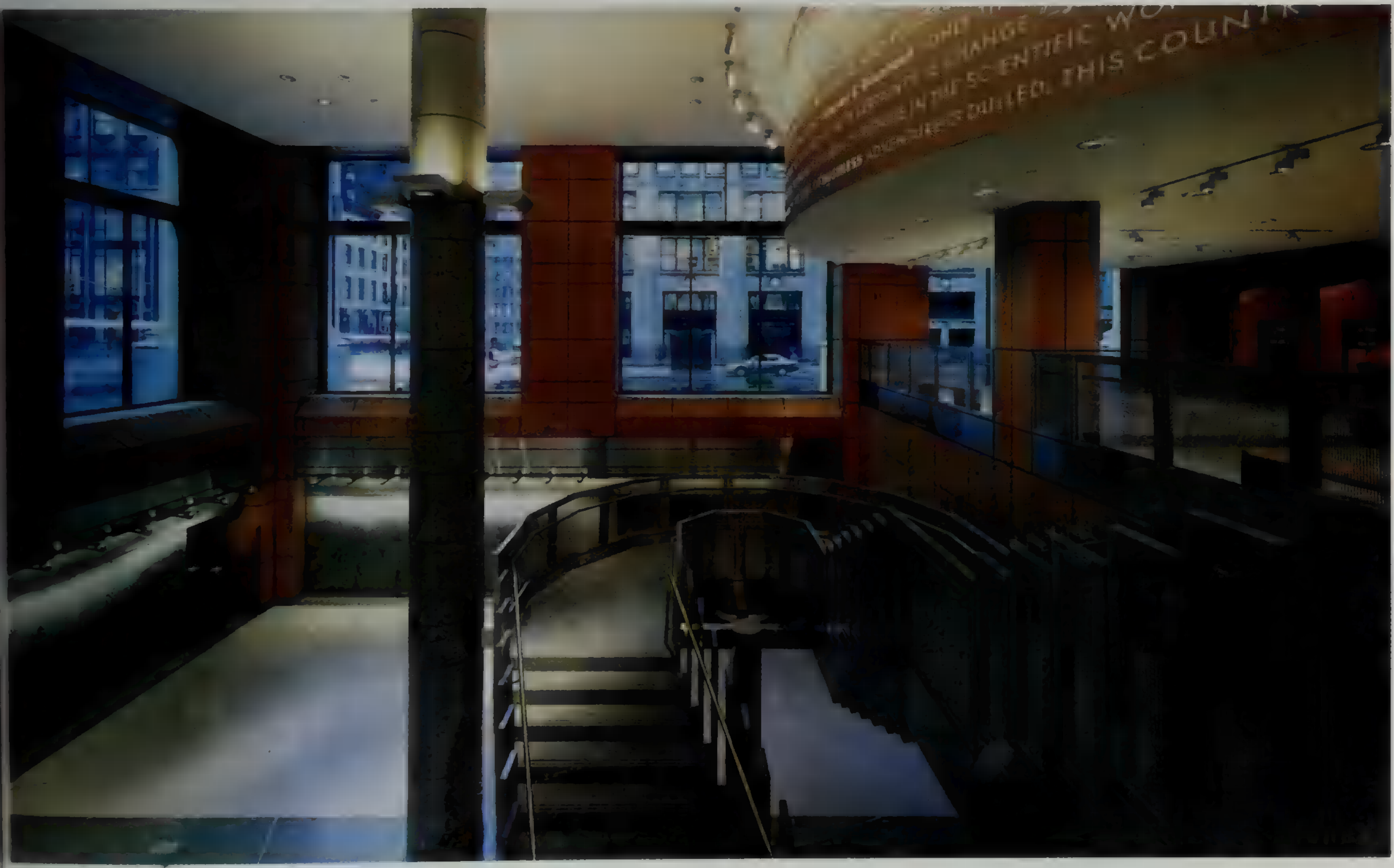
Drawings from a 1914 B. Altman catalog depict the original character of the Madison Avenue building, designed by Trowbridge & Livingston in 1906 and expanded in 1914. Save for a cleaning and new double-glazed windows, the exterior was largely untouched by Gwathmey Siegel & Associates (photo top left).

Creating an image for this new hybrid was the challenge faced by Gwathmey and partner Robert Siegel. The architects were awarded the commission following an interview process and design-ideas com petition that included, in the last round, two other New York City-based finalists, James Stewart Polshek and Partners, and Beye Blinder Belle, equally adept at working with historic structures. Sa Gwathmey of his firm's design approach: "The program required 50,000 sq ft of public space. To put it on a single level is more manag able [for staff to supervise]." While the other teams distributed the public space among several floors, Gwathmey Siegel made the basement level—the single largest floor plate—not as stack space, but entirely public, a winning characteristic according to William Walke director of The Research Libraries of NYPL.

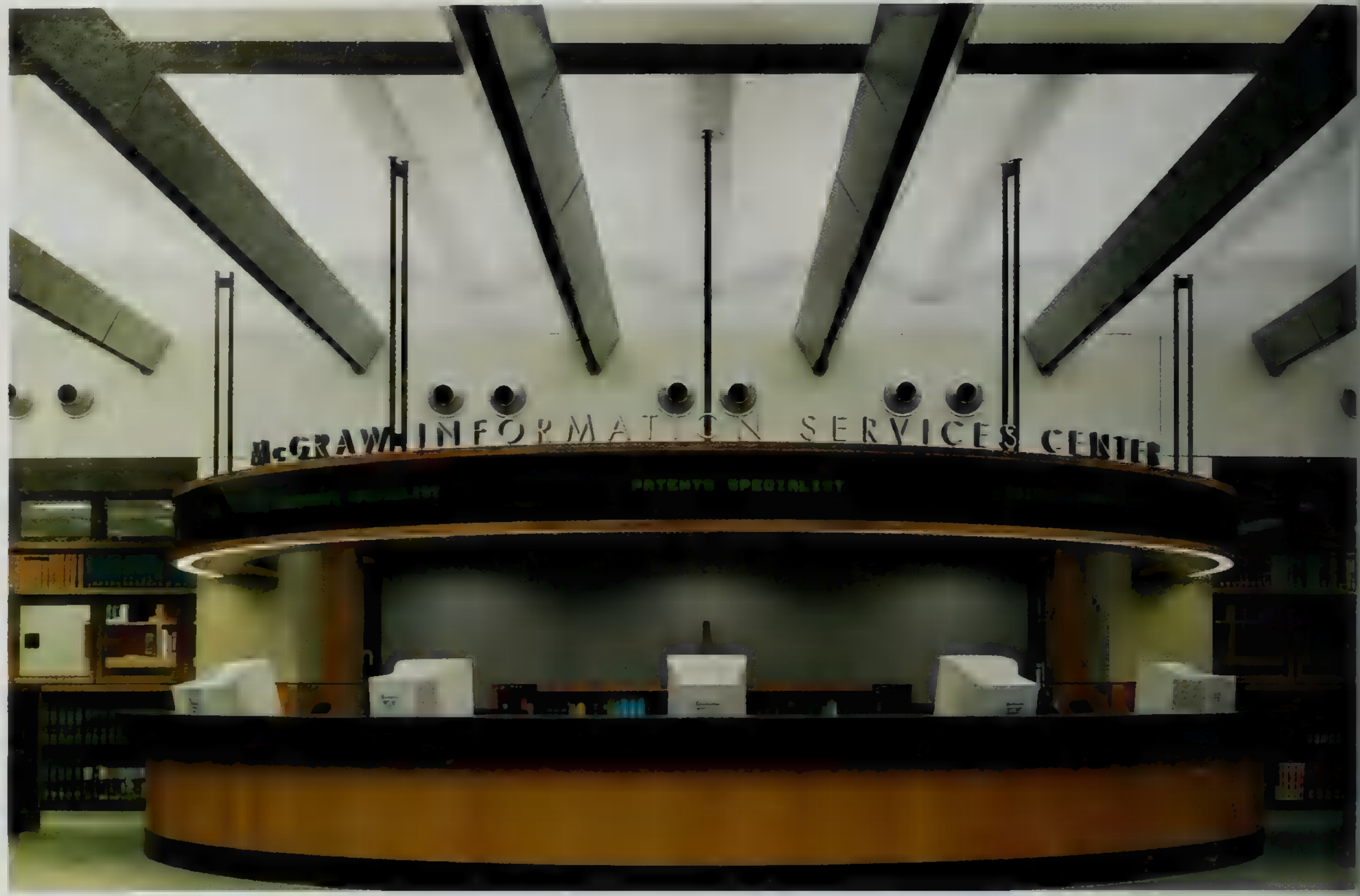
While any new facility for The New York Public Library is overshad owed by the Fifth Avenue "headquarters," a 1911 white marble temple by Carrère & Hastings, the architects were unwilling to repl cate what Gwathmey calls its "library-as-edifice" approach. Howeve occupying another historic, if less venerable, structure that was designed in 1906 by Trowbridge & Livingston and expanded in 1914. did provide SIBL the added "dynamic of history," says Gwathmey. The contrast of 8-ft-thick exterior stone walls with the slick planarit of more modern materials like stainless steel on the inside energized the mix of old and new. Another dynamic is also clearly at work: the remaking of a retail space for scholarly use. In fact, the selection of the space has as much to do with SIBL's current success as does the realization of its unique program.

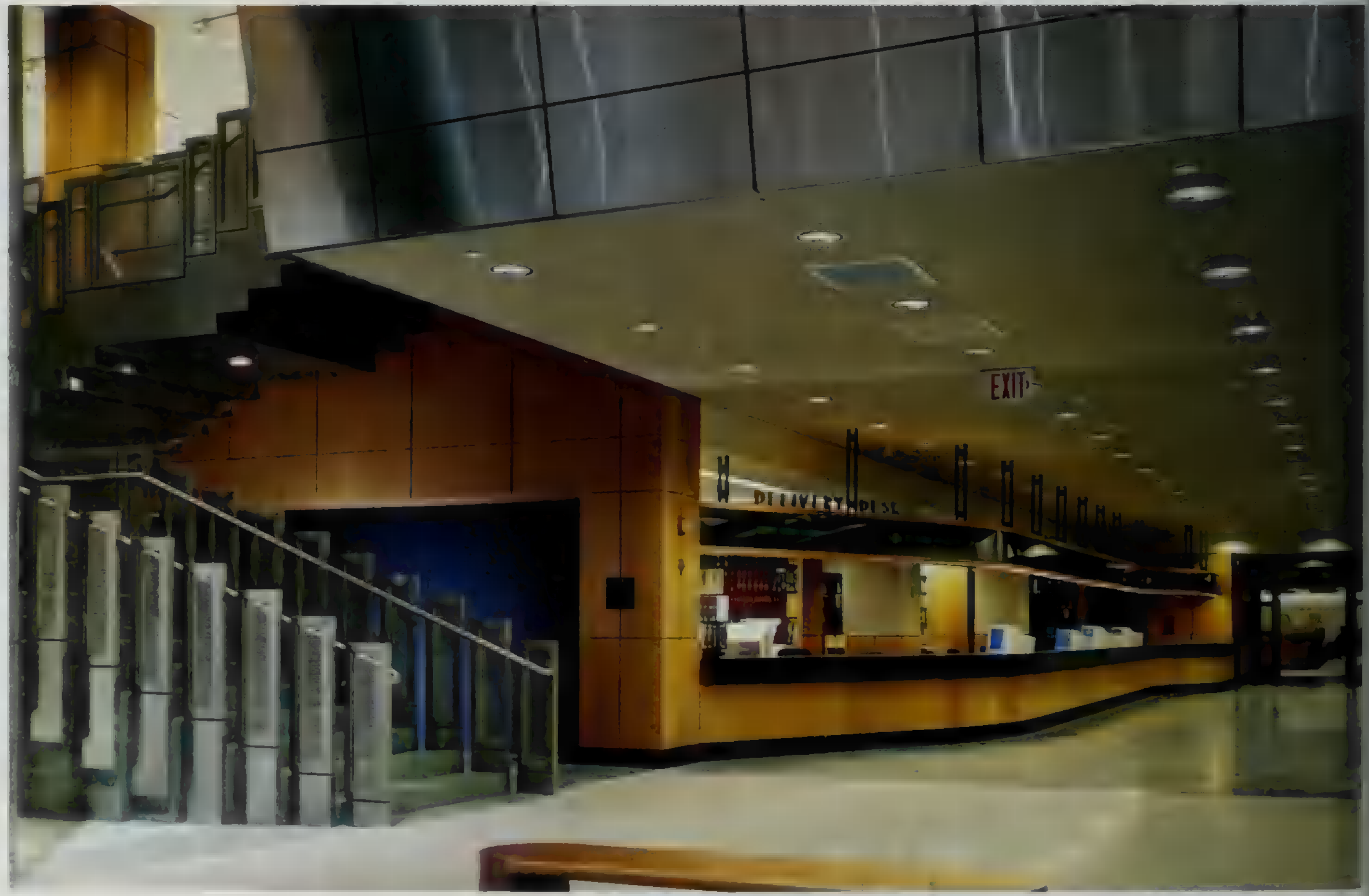
(*Continued on page 90*)

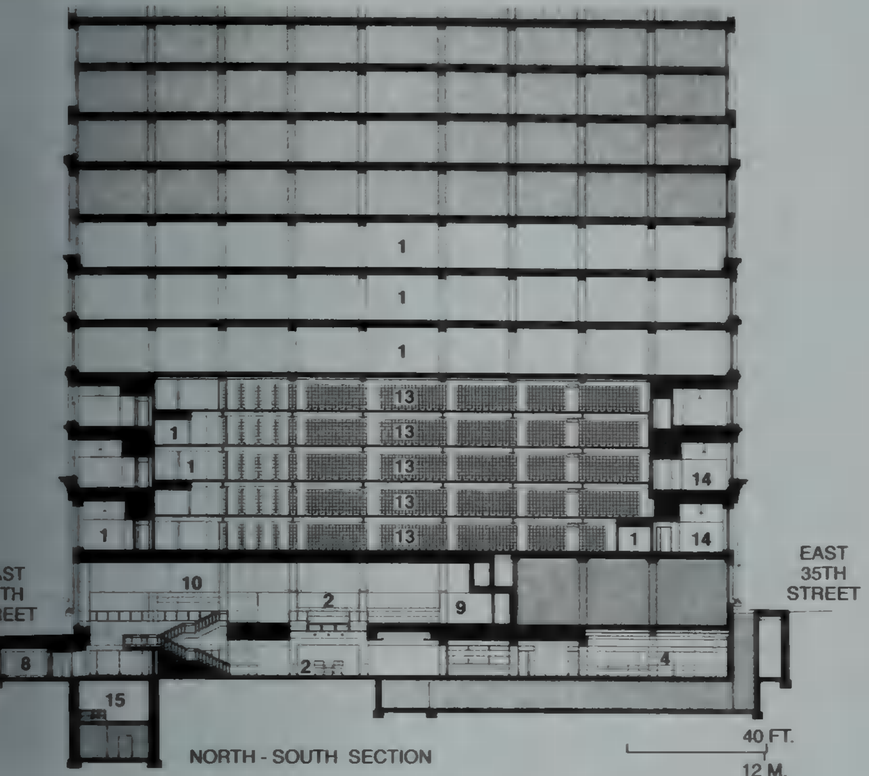




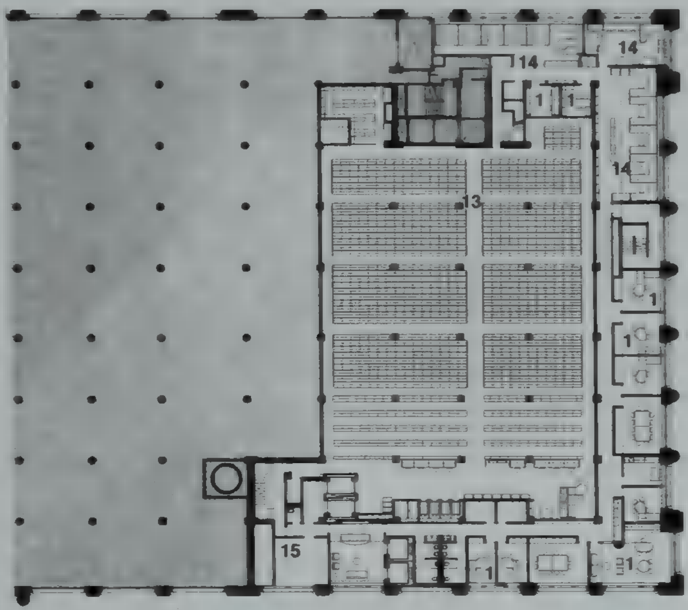
The double-height entry space, named Healy Hall, includes exhibition space, information desks, and access to the circulating library (previous pages and below right). On the basement level, the McGraw Information Services Center (top right) provides "brilliant sight lines" across the catalog center and reading room for library staff supervision, according to William Walker, director of The Research Libraries. Major materials are stainless steel, oak, and terrazzo.



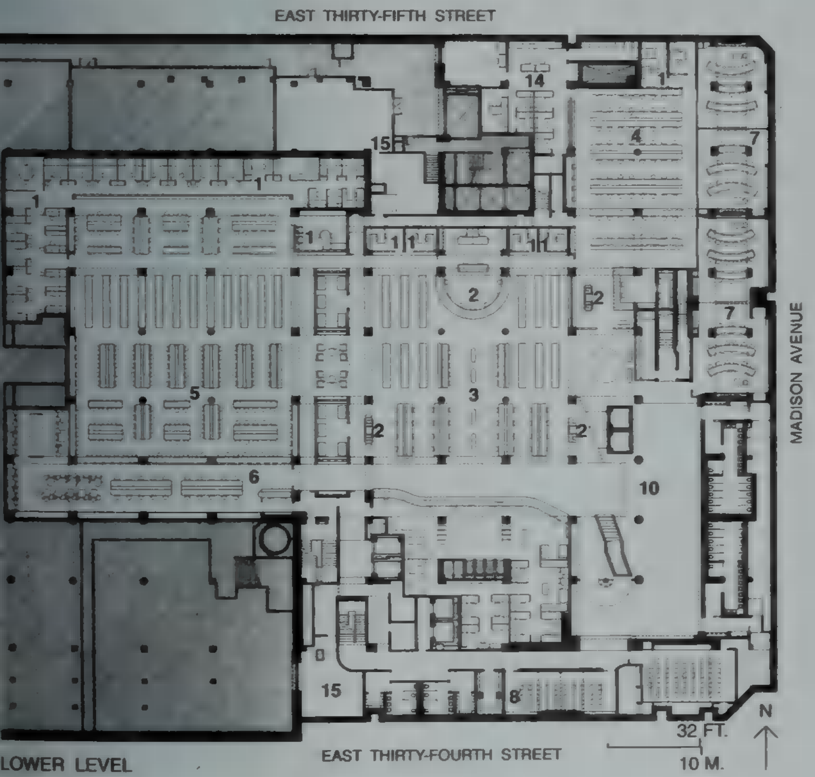




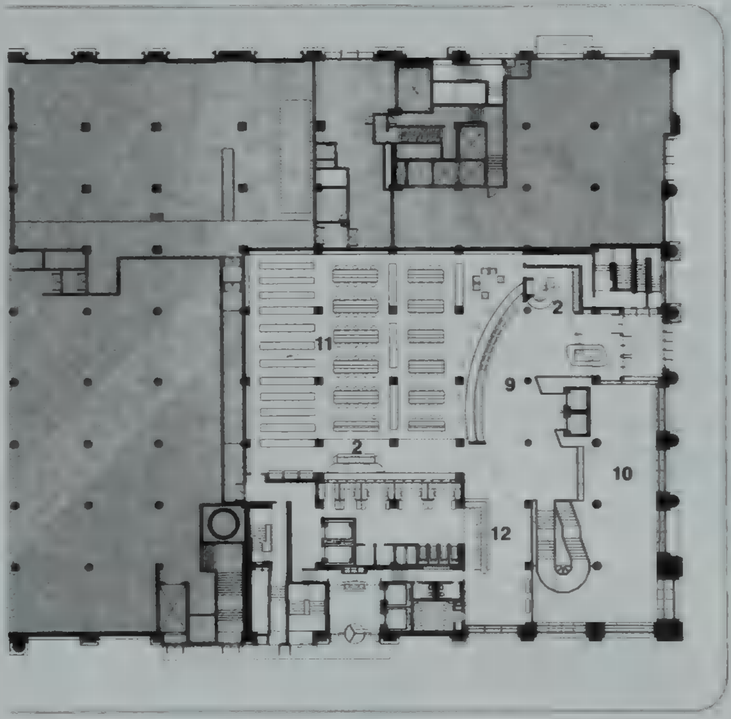
NORTH - SOUTH SECTION



STACK LEVEL ONE



LOWER LEVEL



STREET LEVEL

1. *Office*
2. *Information*
3. *Online catalog*
4. *Electronic Information Center*
5. *Reading room*
6. *Microform*
7. *Electronic training room*
8. *Conference center*
9. *Lobby/display*
10. *Healy Hall*
11. *Circulating library*
12. *Circulating desk*
13. *Stacks*
14. *Work room*
15. *Mechanical*

(Continued from page 84)

Thanks to a slump in the local real-estate market, The New York Public Library was able to convince the owners of the massive B. Altman Building to go co-op in 1993, allowing the library to purchase a portion of the space, some 217,000 sq ft spread over seven above-ground floors and two basement levels. By redistributing the floor levels, the architects produced 235,000 sq ft of useable space: 160,000 sq ft for SIBL, with the remainder slated for future expansion. Funding for the project came through a public-private partnership. The New York Public Library received $25.5 million in financing, and private gifts totaling $50 million supplemented $24.5 million in government funds from a variety of sources: $13 million from the city, $7.5 million from the state through the Port Authority of New York and New Jersey, and $4 million in federal support from the Small Business Administration and the Economic Development Administration.

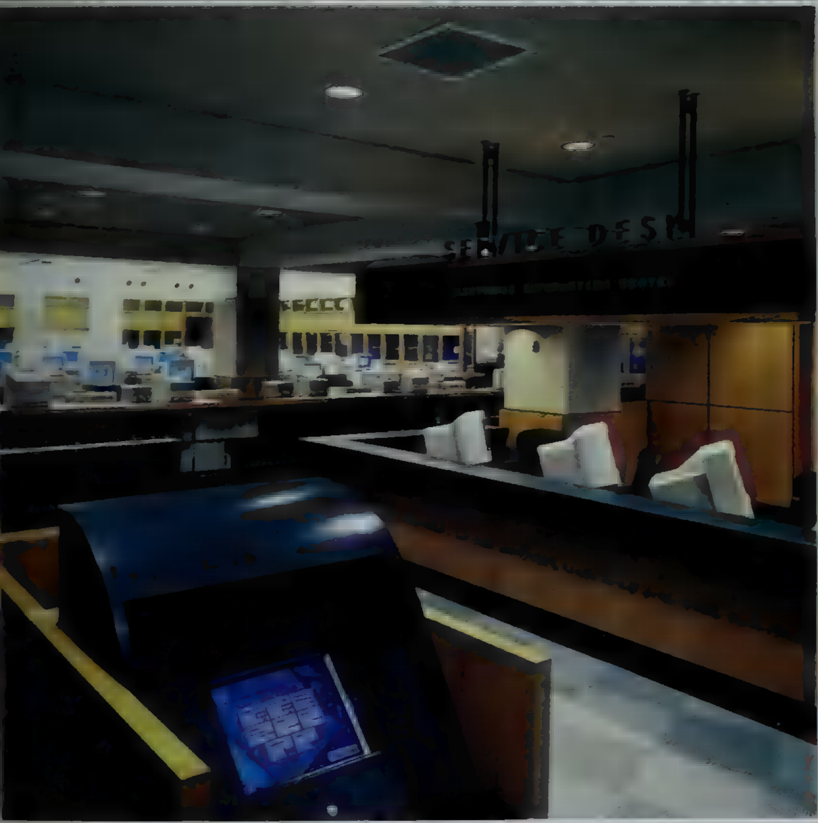
New York City landmark regulations required that the B. Altmans' exterior facades be retained, so shop windows have been reconceived as windows on a learning center. SIBL is an open book to the pedestrian traffic along Madison Avenue, a deliberate acknowledgement that, today, libraries must compete for their patrons with other hybrids like super-size bookstores that permit endless browsing in modified living-room niches.

The architects capitalized on views to the street by creating a grand interior public space, intended for exhibition use, that connects the two main public levels. Gwathmey calls this two-story atrium (preceding pages), named Healy Hall in memory of former library president Timothy Healy, a "public square." This internal courtyard with its glass and steel elevator cab and staircase of cascading planes of stainless steel, benefited from a quirk in the largely flat Manhattan street grid. Between the south corner and the entry of the building, Madison Avenue slopes up four feet, establishing a sense of vertical motion on entry that the architects have carried through in their design.

"There was a lot riding on this project," says LeClerc of the balancing act between past library precedents and anticipation of future needs. While client and architect of SIBL have focused on the need for invention in the library building type, the site itself offered the lessons of precedent: Benjamin Altman, patron of the original structure, was also considered a maverick for moving his department store from Sixth Avenue and 19th Street to what at the time was a residential neighborhood uptown. Eventually, other merchants followed.
Karen D. Stein

In the basement level (top lef
the architects exposed origin
terra-cotta arches, raising th
ceiling heights to 14 ft. A plas
finish and reflective ambient
lighting were added. Comput
access is provided throughou
(top right, middle left), as are
accommodations for book use
(middle right). Staff offices fa
south, overlooking 34th Street
and have a separate entrance
(bottom).

Credits
The Science, Industry and
Business Library
The New York Public Library
New York City
Architect: *Gwathmey Siegel &*
Associates Architects—Charl
Gwathmey, Robert Siegel,
principals-in-charge; Jacob
Alspector, associate-in-charge
Earl Swisher, project architect
Sean Flynn, job captain; Kare
Brenner, Oana Bretcanu, Wen
Burger, Federico Del Priore,
Steven Forman, Mike
Harshman, Philip Henshaw,
Mark Hill, Rebecca Iovino, Jo
Johnston, James Leet, Martin
Marciano, David Mateer, Che
McQueen, Mark Montalbano,
Jeffrey Poorten, Joseph River
Elizabeth Skowronek, Tom
Levering, Joseph Ruocco, proj
team
Engineers: *Severud Associat*
(structural); Jaros Baum &
Bolles (electrical/ mechanical/
hvac)
Consultants: *Shen Milsom &*
Wilke (A/V); Cole Gillman
Associates and Jam Consulta
(code); Spagnola & Associates
(graphics); Edwin Schlossberg
Inc. (electronic display);
Logistics, Inc. (furniture);
Hillman DiBernardo &
Associates (lighting); Glezen
Associates (hardware); Chapm
Ducibella Associates (security
Sunrise Systems (LED displa
Construction Manager: *A.J.*
Contracting Company, Inc.


SERVICE DESK

EXIT

Lapidus Laughs Last

Scorned by many through much of his life, Morris Lapidus, who turns 94 in November, knows how to get the last laugh: simply outlive your critics. Indeed, Lapidus—whose prolific career began in the 1920s and never truly drew to a close—spent many years dodging verbal bullets and professional denigration over the excesses and flourishes that marked his work. He was the Miami Beach architect who dared to do too much in an era of minimalism and restraint.

In the late 1970s and early 1980s, however, Lapidus began to enjoy a new popularity. One day, while leafing through Charles Jenck's 1977 book *The Language of Postmodern,* he saw his name mentioned as the pioneer of "Ersatz Style." It was the kind of affirmation he'd been yearning for over several decades—a legitimizing moment. It galvanized him. Lapidus stepped out of obscurity and called me to suggest an interview since I was then the *Miami Herald*'s architecture critic. It was the first of many conversations.

Now Lapidus is about to come out with a new autobiography, *Too Much Is Never Enough*, to be published by Rizzoli next month. A first autobiography, entitled *An Architecture of Joy*, was released when Lapidus was in his 70s. But he's not resting on past laurels. He has been consulting on the renovation (by a team including architects Ben Wood and Carlos Zapata, and landscape architect Martha Schwartz) of Miami Beach's Lincoln Road Mall, a pedestrian promenade Lapidus designed in 1961, among the first auto-free open malls in America. He also recently participated with his architect son Alan in a proposal for Miami Beach's planned convention hotel, although they didn't get the commission, and worked on a design for a restaurant in Lincoln Road's Sony Building (the restaurant plan was abandoned).

In the course of the last two decades, he's written prolifically, including a 1989 study of the human race entitled "Man's Three-Million Year Odyssey." A Dutch publisher produced a monograph on his work, and an exhibition toured Europe; he's given his archives to Miami Beach's Bass Museum, which mounted an exhibition of its holdings in 1993. He's lectured abroad and at home, including the 1992 keynote talk to the American Institute of Architects' (AIA) Young Architects Forum, his first AIA appearance since the one he made in 1961 at his own Americana Hotel in Miami, where he was roundly ridiculed and left embittered.

It's easy to see why Lapidus is such a controversial figure. During the busy years of his practice, he bucked trends [see portfolio of his work on the following pages]. Back when most other architects were clinging to Classicism and designing only the loftiest of structures, he turned to Modernism and began doing commercial architecture. At a time when most architects embraced the Modern movement, Lapidus moved away—more or less. He spurned Mies van der Rohe (of whom he says, "I call him the black plague of architecture") in favor of the Brazilian Modernists, especially Oscar Niemeyer. And though his work took Modernist shape—the original Fontainebleau Hotel building is a fine example—he let the interiors get, well, carried away. He was a crowd-pleaser, a showman, a circus performer in an era of architect-as-god. Ayn Rand, author of *The Fountainhead*, could never have created Morris Lapidus. *Beth Dunlop*

On the eve of the publication of his second autobiography, RECORD correspondent Beth Dunlop talks to Morris Lapidus, nearly 94, about his staying power.

RECORD: Why is it that your designs seem so fresh today, six and seven decades later?

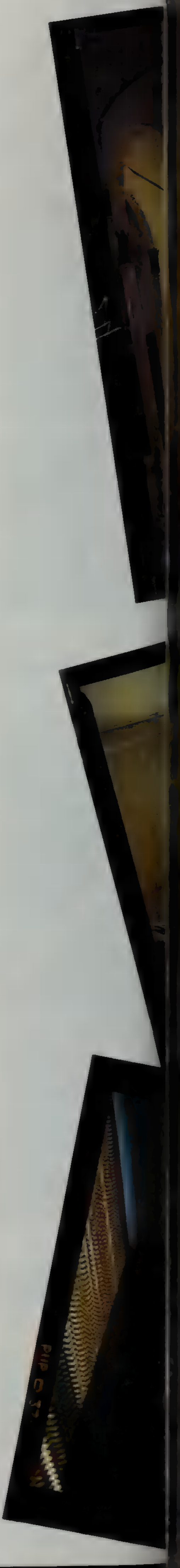
Lapidus: My first real store was the Theresa Pharmacy [in 1927]. The store caused a furor at the time, at least in the pharmacy business. There was a pharmacy in Harlem in the Theresa Hotel and Harlem began to change, so the Theresa Pharmacy came down to Broadway. I decided I was going to do a Modern pharmacy. But what was Modern? Only a few years before was the Paris exposition of Art Deco. I decided to do all the counters and cases in black with moldings in silver. So I did black and silver. I designed a light fixture in a skyscraper style in a smoky glass held together with leaded glass, which was actually a disaster later because the lead melted. I also did a verde antique marble soda fountain and installed a red linoleum floor. Armstrong was coming out strong right at that time. I had the plasterers make a white sunburst in the center of the ceiling, but the rest of the ceiling I painted red.

RECORD: You obviously had a flair for the dramatic from the very start.

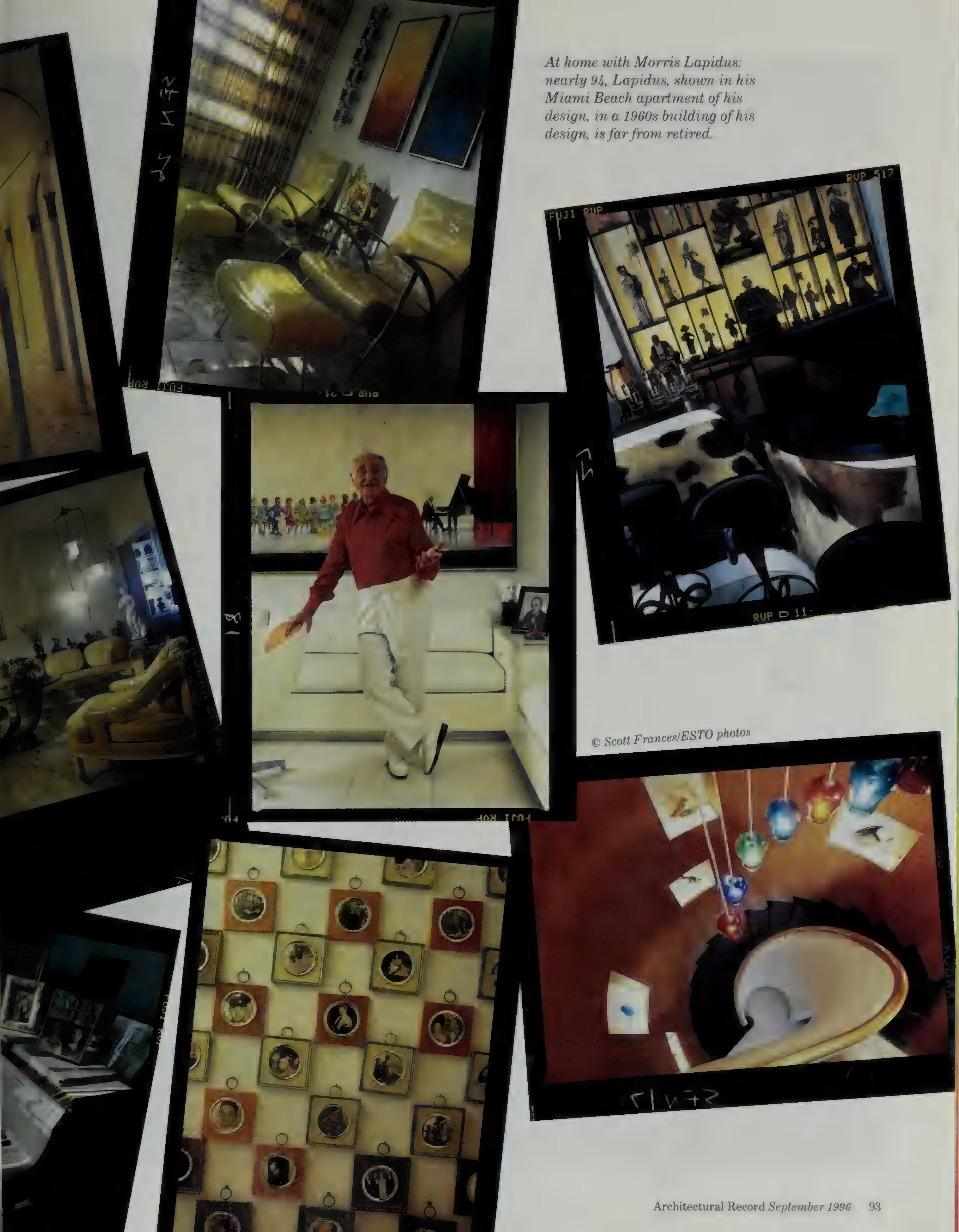
Lapidus: Well, they hired me and they paid me $3 an hour, or whatever it was.

RECORD: How did you get into store design so early in your architectural career?

Lapidus: Starting out, I studied drama at NYU (New York University). In fact, last year I won the achievement award for the class of 1925 even though I never graduated. I really wanted to be an actor. I got a chance to understudy a part on Broadway in a wonderful play, "He Who Gets Slapped," but I discovered I hated an actor's life. You're backstage, just sitting there, sitting, sitting. I decided to become a scenic designer. That's when I went to Columbia University. My earliest stores I never even photographed. They were just after I graduated from Columbia. I was working for one architect, then another. I was moonlighting by designing stores for [New York City architect] Ross Frankel. I couldn't make much money as an architect. Ross Frankel kept offering me more money, more money, and finally he offered me



At home with Morris Lapidus: nearly 94, Lapidus, shown in his Miami Beach apartment of his design, in a 1960s building of his design, is far from retired.



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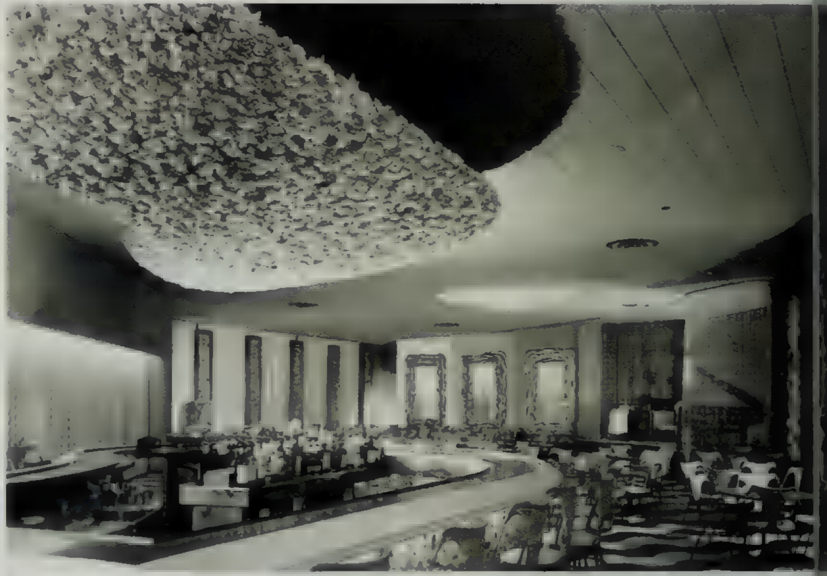
a sum so high that it was inconceivable for me not to take it: $10,000 a year. Imagine, $10,000 a year in 1925. So I left architecture, or so I thought, to be a store designer. Remember, I was trained in a Classical tradition at Columbia. Of course, now I'm in store design. Now what in the hell am I going to do? My challenge was what am I doing and why am I doing it? So I began developing my own theories. First, I thought of identification of the store, of graphics, so I used these great big signs. Neon had just come out, so I used neon. On my storefronts, I was strongly influenced by Art Deco, so instead of using stock storefronts I did my own with wrought iron mullions and Art Deco floral forms in the ceilings, supporting milky glass. I was really doing what I considered to be Modern stores. If it was new, I used it: fluorescent lighting, for example. I was there at the birth of the fluorescent light. So then I said, what am I going to do inside? For one store I carved women's figures into the pilasters. Most designs were semi-Classic then with imitation columns and imitation capitals and imitation cornices and imitation pilasters. I also thought a store should have color, bold color. There was a women's store, Mangel's Ready-to-Wear. I told them I'd like to use colors. I said, "Let me try it, and if you don't like it, at no cost to you we'll repaint it." That was in Florida, in Jacksonville. I used wallpaper with nice big cabbage roses. I painted some walls the nice pink of the roses, some yellow and some blue. Well, Mr. Mangel had a fit, but it was too late to repaint before the store opened. At the opening, he and I stood outside listening, and the customers all came out saying, "What color!" So Mr. Mangel said, "From now on, use color."

RECORD: The vocabulary you started using in your stores stuck with you as you designed the hotels that you became famous for, did it not?

Lapidus: I began using unusual forms, first circles. I used them in the ceilings and then on walls. I loved curves, circles. I thought why must a store be a rectangle? So I began to use curving forms. By the time I was through, there were no straight lines left. There were no beginnings and no endings in my stores. Then the editor of an interior design magazine said "What are you using? Woggles?" That was Olga Gueft, who was editor of *Interiors* then. Then they started calling some of my circles "cheese holes." Then Olga started calling my [illegible] "bean poles." So I had my alphabet. ■



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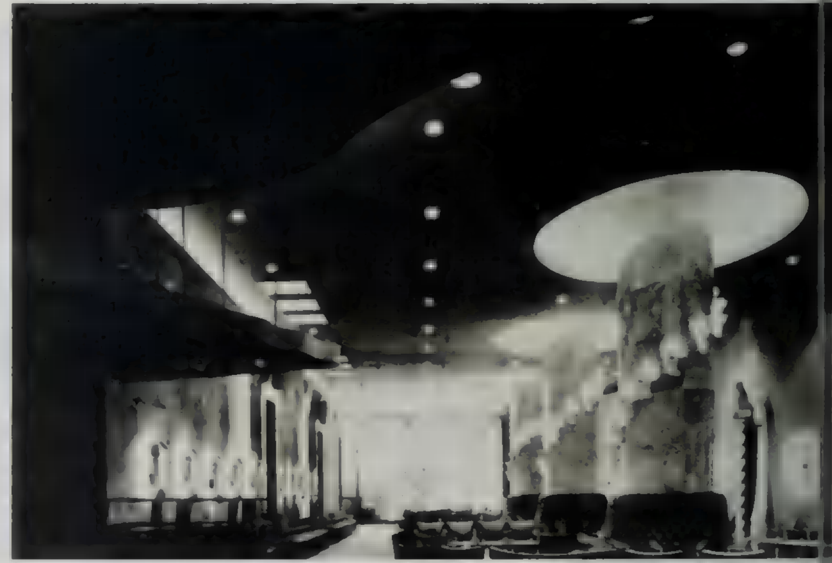

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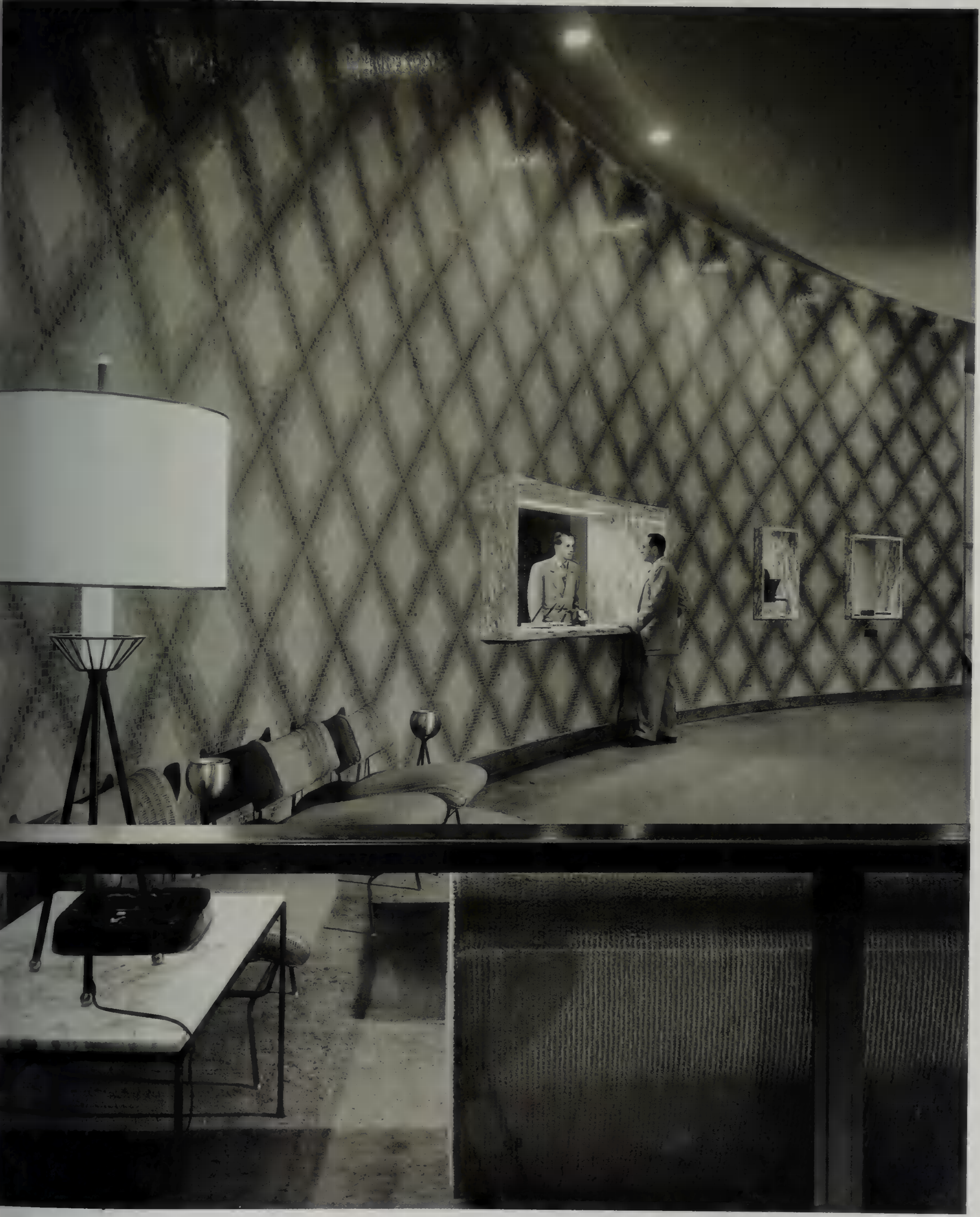
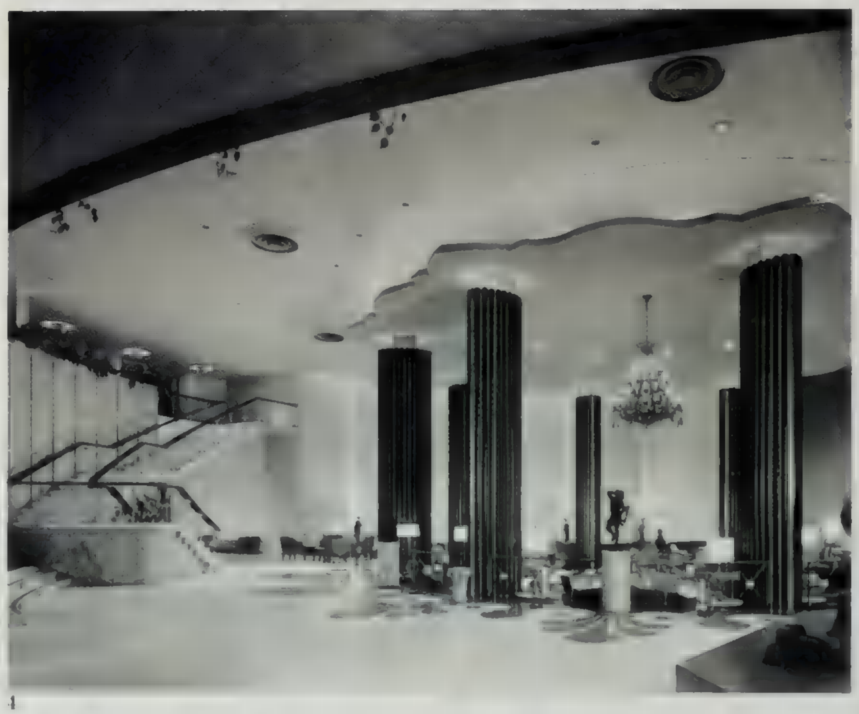
1. Americana Hotel, Bar Harbour, Florida, 1956
2. The Ansonia Shoe Store, New York City, 1940
3. Algiers Hotel, Miami Beach, Florida, 1951

Gottscho-Schleisner, Inc. courtesy archive of Morris Lapidus



4. Eden Roc Hotel, Miami Beach, Florida, 1955
5. Algiers Hotel, Miami Beach, Florida, 1951
6. Fontainebleau Hotel, Miami Beach, Florida, 1954
7. Americana Hotel, Bal Harbour, Florida, 1956
8. Biltmore Terrace Hotel, Miami Beach, Florida, 1951



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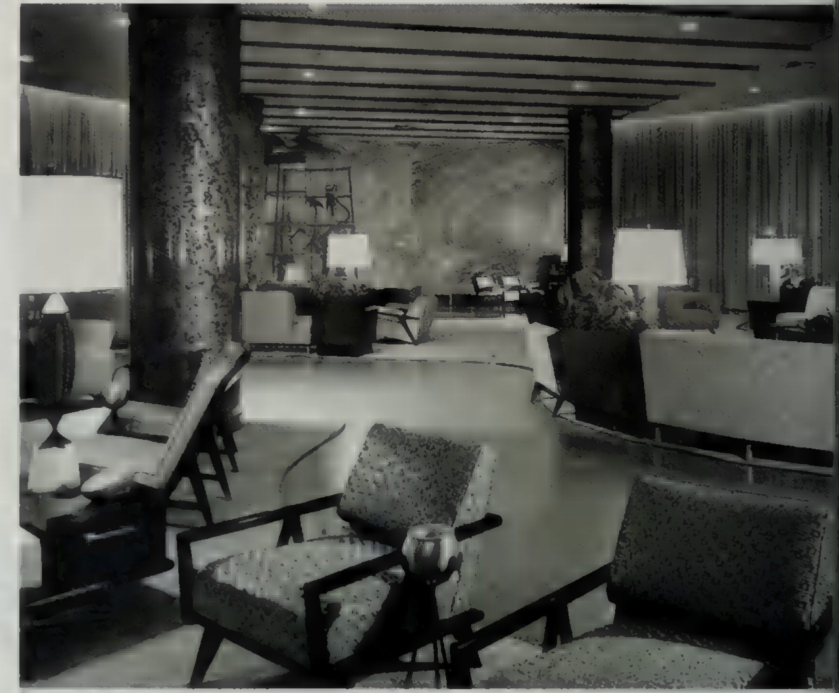

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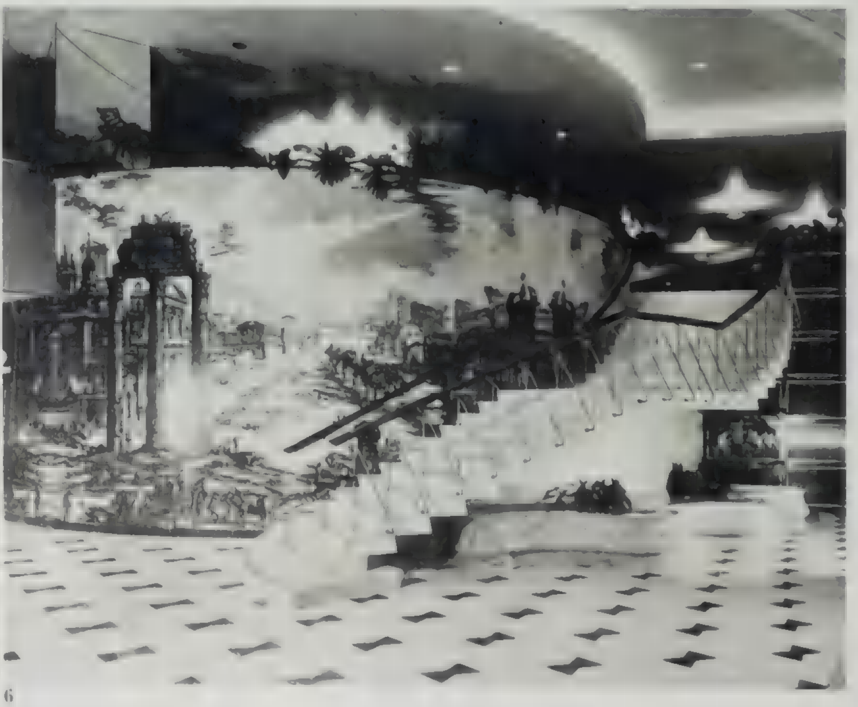

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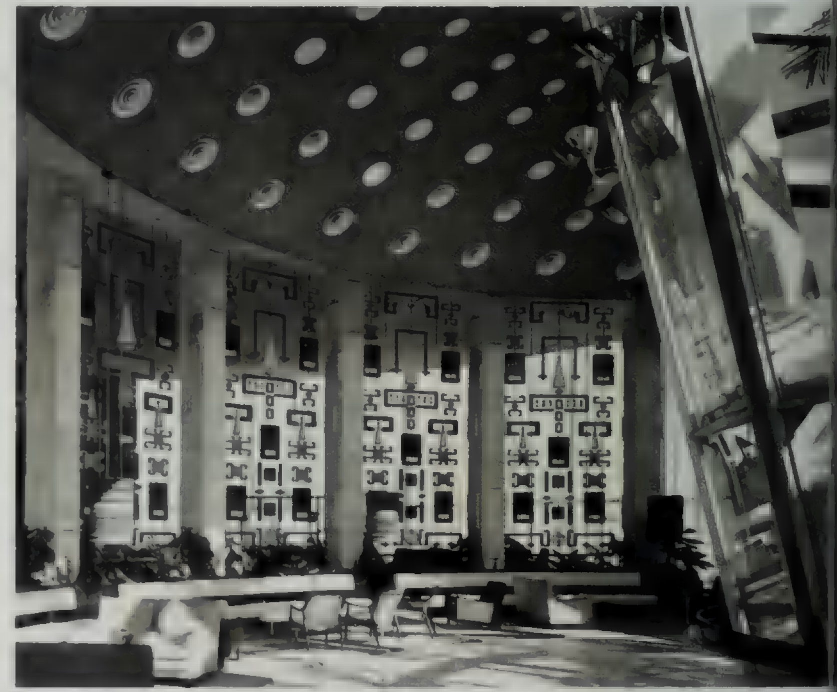

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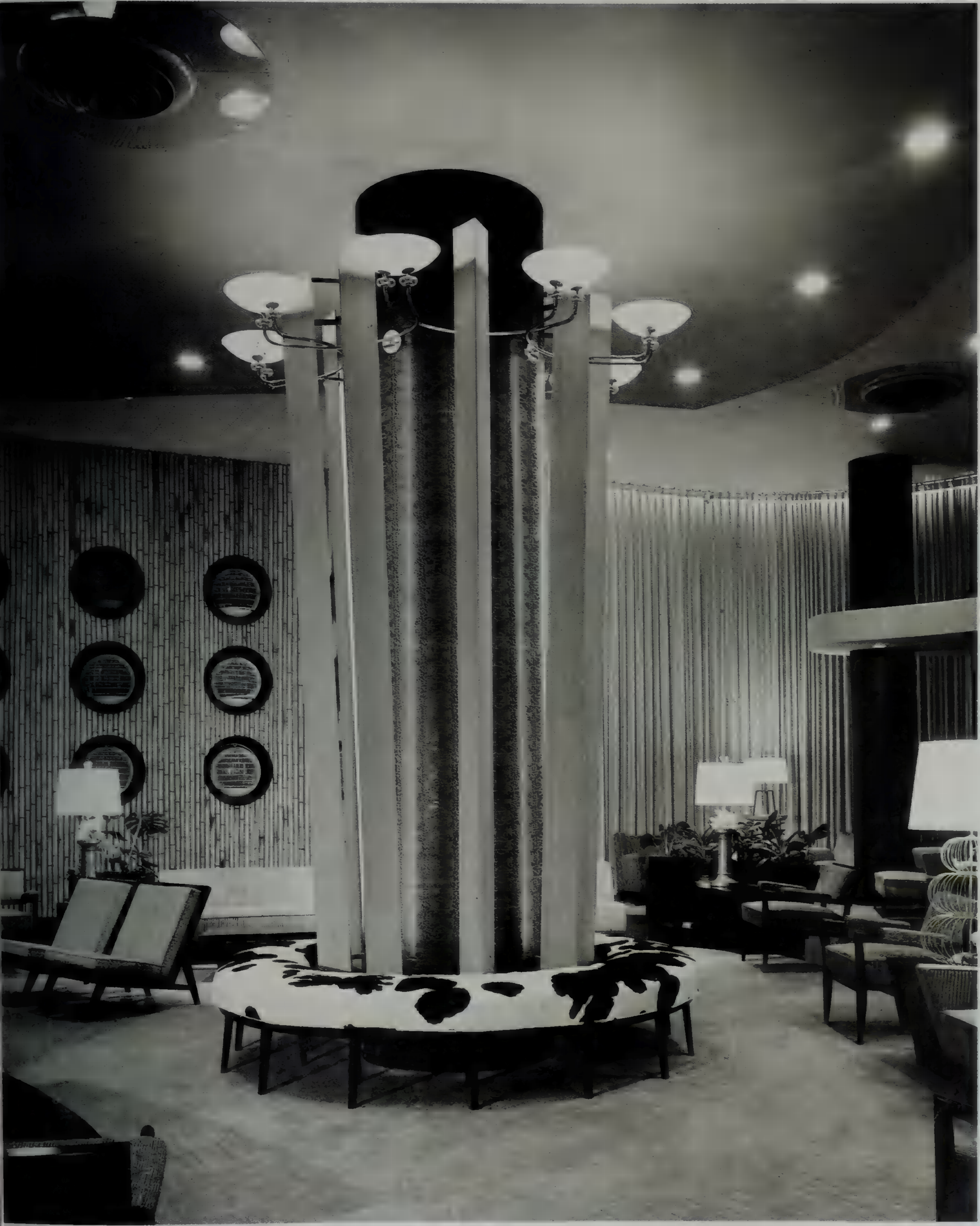
Gottsch-Schleisner, Inc., courtesy archive of Morris Lapidus



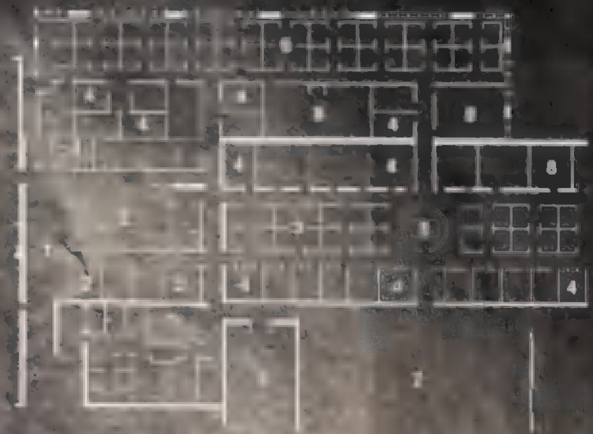
Modulating in Industrial Space

These days almost everybody has a modulator-demodulator, or modem, linked to their computer. The architects took derelict industrial space and, using new finishes and a layout, modulated them into modem-maker U.S. Robotics' new plant.

UWest was "the worst building U.S. Robotics had decided to rehabilitate yet," says architect Joe Valerio, referring to his on-going relationship with the manufacturer. The 300,000 sq-ft manufacturing building "was a wreck." Much of the work in a modulation/demodulation style here could be defined in the structural measures that were taken to enable good communication. These were accomplished by the architects simply laying out offices for the manufacturing engineers perpendicular to the axis of the production floor, along a hallway of metal-mesh curtainwall they adoringly call "the chunnel of industry" (see partial floor plan below). Featured in the chunnel of industry are a pair of wooden cylindrical drums (following two pages) affectionately known as "the reactors," a well-chosen name, considering that they are coffee bars, an all-important source of energy for U.S. Robotics' engineers.

Elsewhere at UWest (photos right and opposite), finishes modulate the hard industrial origins of the building, softening them somewhat, but not enough to make them mimic the seamless surface of a modem case. If these wood and metal-mesh panels were popped off, one would expect a nest of wires and printed-circuit boards not to come tumbling out. *Charles Linn*

Credits
UWest
Morton Grove, Illinois
Owner: *U.S. Robotics*
Architect: *Valerio Dewalt Train Associates—Joseph M. Valerio, partner-in-charge; David Lennerjohn, project manager; Jeff Berta, project architect; Daniel Herman, Sarah Morie, Neil Sheehan, project team*
Engineers: *WMA Consulting Engineers (m/e/p); SDI Consultants, Ltd. (civil); Don Belford Associates (structural)*
Consultants: *Nancy Willert (interior design); Peter Lindsay Schaudt (landscape)*


1. *Reception*
2. *Conference*
3. *The "chunnel of industry"*
4. *Enclosed offices*
5. *The "reactor" (coffee/fax station)*
6. *Open offices*
7. *Production area*
8. *Laboratories*
9. *Break room*

©Barbara Karant photos

EXIT

From Bus Station To Fitness Center

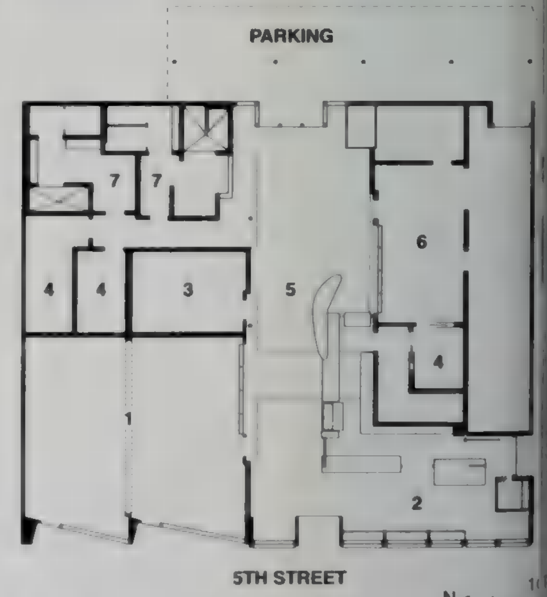
Bus Wellness Center
Santa Monica, California
Steven Ehrlich Architects

"Architecture can be a performing art," says Steven Ehrlich. In this case, the youthful California practitioner had to work hard at projecting enthusiasm to his dubious developer clients to convince them that a dark and dank, deserted bus station could be converted into a bright and airy physical-fitness center. He had toured many available spaces with the three exercise enthusiasts, but his choice was the bus station. Ehrlich saw past latter-day remuddlings such as maze-like partitions and blocked-in street windows. Steel mesh sun screens (top right) above blank walls were the only clues to the windows' existence. Here was potential: a structure full of hidden 1950s character in a prominent Santa Monica location built with reinforced-masonry bearing walls strong enough to meet new stringent seismic codes.

Ehrlich and his design team's first task was to examine the existing layout and develop a plan that accommodated the required spaces (right) with a minimum of demolition and new construction. The objective: keep the 5,000 sq-ft project within a Spartan budget of $175,000. Ehrlich likens excavations into decaying finishes to an "archeological dig." Above the sagging hung ceiling, the architects found timber and tapered steel-beam roof supports, which they promptly exposed. Under debris, they found the waiting room's original terrazzo floor. To keep the floor, they filled it with contrasting grey cement where new work, such as utility trenches and ramps, required disturbing the surface. (One ramp leads up to the maple dance floor on rubber sleepers.) The old bus-station sign, taller than new codes would allow, stayed put to become the gym's namesake.

To bring in light and air, the architects reproduced the original street windows and added skylights that rise to capture the nearby ocean's breezes. By removing only three partitions, they created an inviting central sweep through the building from street door to rear parking-lot entry, used as a juice and coffee cafe (opposite, top). This space attracts constant activity and creates a clear route to the various exercise spaces, visible through large openings sealed for excessive noise with glazed overhead garage doors. Custom touches within the tight budget include a sculpted-glass juice-bar counter, free-form cafe tables, and specially altered gym equipment painted with bright blue automobile paint (lower right). As testament to Ehrlich's successful client relationship, he recently celebrated his birthday with a party at Bus, where guests tried out the equipment as part of the celebrations.
Charles K. Hoyt

Credits
Bus Wellness Center
Santa Monica, California
Owner: *Richard and Agnes Thayler, Brian Cinadr*
Architect: *Steven Ehrlich Architects—Steven Ehrlich, Nick Seierup, principals; James Schmidt, project architect; Iris Anna Regn, [illegible], Gary Alzona, Markus Hintzen, Sookja Lee, Mei-Ting Lin, project team*
Engineer: *Gordon L. Polon (structural)*
Consultant: *Edward Effron, Designing in Light*
Glass Artist: *[illegible]*
General Contractor: *Ben Levine & Son—Michael Levine, project manager*



PLAN

1. *Dance/aerobics*
2. *Retail*
3. *Plate room*
4. *Office*
5. *Cafe*
6. *Gymnasium*
7. *Lockers*

Adrian Velicescu photos

A House That Remains a Work in Progress

A pair of young Canadian architects continues the three-decades-long process of adding new layers of building and meaning onto a house in suburban Toronto. The project shows their interest in weaving together landscape and architecture, using light to animate space, and creating Zen-like places. Their latest work at the house is a bathroom addition that shines like "a clearing in the forest."

Piece by piece, Brigitte Shim and Howard Sutcliffe are transforming a quiet Modern house from the 1960s into a quiet Modern house of the '90s. The changes are incremental, respectful of the past, evolutionary. The radical shifts of scale or style found in some renovation projects are missing in this one. Rather than engineering a grand metamorphosis of one architectural species into another, the husband-and-wife team of Toronto-based architects has nurtured a set of design ideas, letting them take root and blossom. The result is akin to a garden that has matured and grown more complex with age.

The garden analogy seems particularly appropriate since Shim and Sutcliffe started their work on this suburban brick-and-cedar ranch house about a decade ago by designing a wooden screen in a brick garden wall (below right). This small insertion in the landscape led to a larger one: creating a terraced garden with reflecting pool, foot bridge, and Cor-Ten-steel pavilion (below left).

The original house, designed for a developer and his family, was an introspective courtyard structure. In the 1970s and '80s, Canadian architect Ronald Thom brought a West-coast sensibility to a series of renovations that connected the house more to its landscape. Sutcliffe, who had worked for Thom, carried on the work after the older architect died, and brought in Shim. (Shim and Sutcliffe both graduated from the University of Waterloo, then went separate ways for awhile, she working for Arthur Erickson and he for Barton Meyers and Kuwabara Payne McKenna Blumberg, as well as for Thom.)

Continuity and change are twinned themes in this house. The owner has remained the same the entire time, though his circumstances have evolved. The children are adults now and grandchildren have arrived. His wife died. He remarried. A collection of African and co temporary Canadian art has also grown, becoming an important ar ever-changing aspect of the house. "We see the house as a series of layers built up over time," says Shim. "We don't try to rework the design each time. It's not about contrasts, but about adding on." When asked about future projects, the client says, "I think I'm goir to be doing this 'til they put me away." In fact, he will remain an active patron of architecture even after his death, having commissioned Shim-Sutcliffe to design his cemetery plot.

The most recent work is a new bathroom for the master bedroom suite. Compared with some of the bathrooms found in shelter maga zines and suburban subdivisions, it is modest in size: about 140 sq f of floor space. While the bathroom is an extension to the original house, the project also included turning the old master bath into th sleeping area for the bedroom and the old sleeping area into a sittir area. With no partitions in the new master suite, one space flows in the next so that light and views can be borrowed. Tall, slender piec of African art serve as another link between old and new spaces.

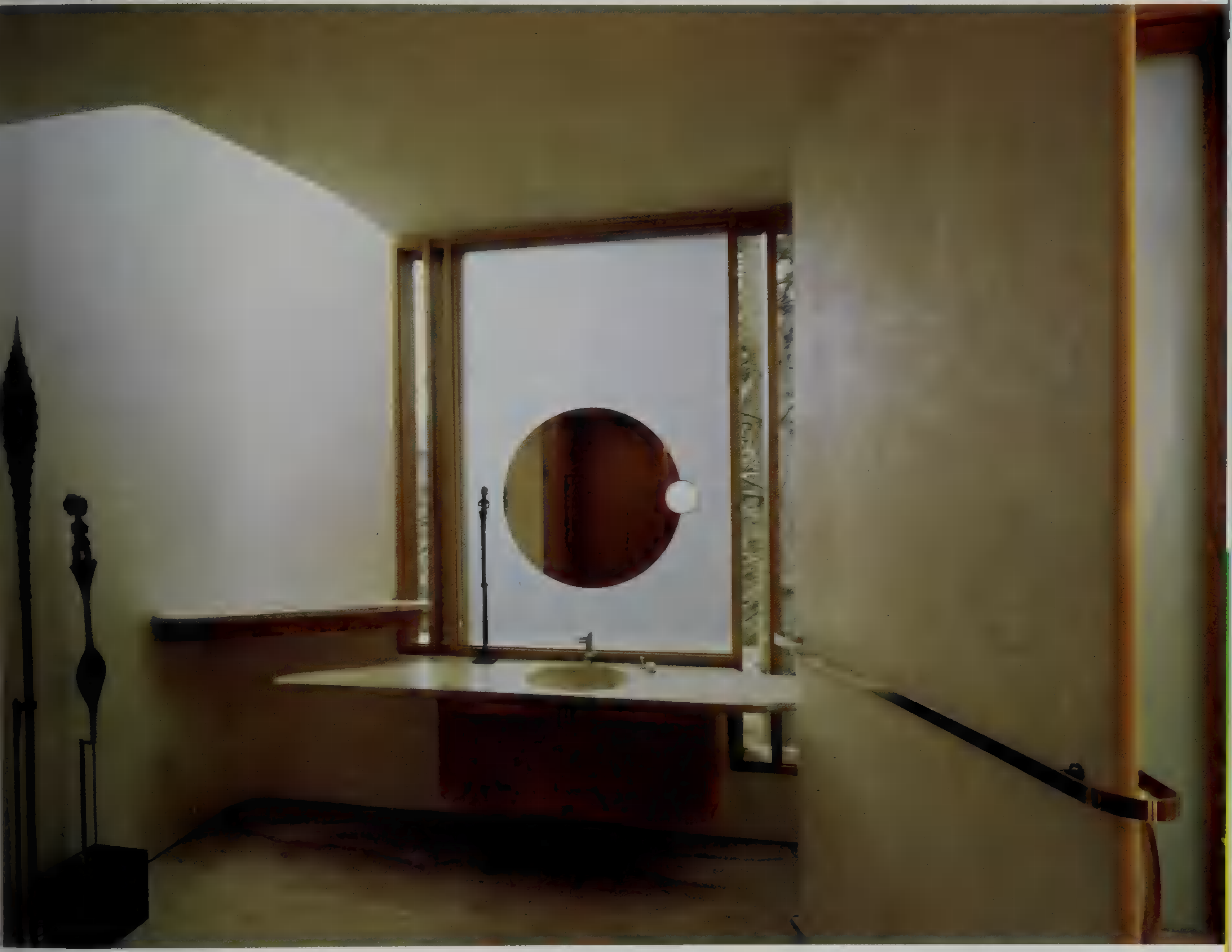
The new bathroom, however, has an identity that is all its own. Whi the older parts of the house are made of ironspot brick and dark woods and feel "earthbound," the new bathroom "is all about light," Shim notes. Since the addition faces a neighboring house, maintain ing privacy while bringing in light was a key concern. The solution was to use skylights, sandblasted glass, and only narrow strips of clear glass. "The room is filled with light that comes in in mysteriou ways," says Shim. "It has the feeling of a clearing in the forest."

The materials used in the bathroom contribute to the sense of light ness. Polished limestone floors contrast with ebonized wood floors i the bedroom, while four layers of Venetian plaster add "depth and warmth" to walls. Faucet fixtures and drawer pulls were designed b the architects (see drawings, following pages). At night, halogen flo lights shine inside and let snow and rain cast shadows on interior su faces. The effect is to remind people inside of what's going on outsi "Our work is about reconnecting people to more primeval condition such as the weather, says Shim. "We accept that the world is hectic. But we understand there's a need to create places where people do have to look at a computer screen." *Clifford A. Pearson*

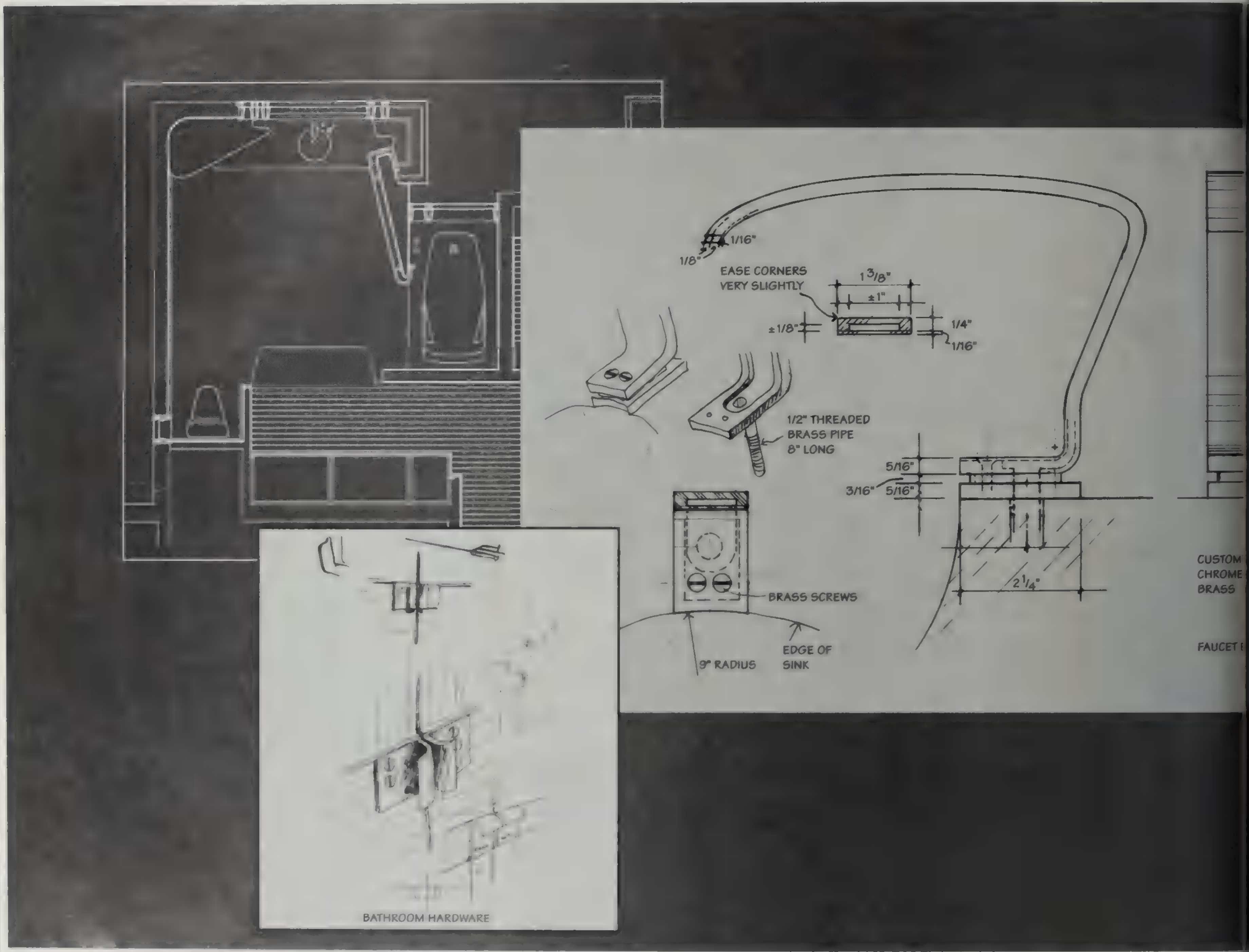
Previous work on the house includes a screen made of resawn cedar planks set in a garden wall (left) and a Japanese-inspired garden (far left) that cascades toward a wooded ravine. Shim-Sutcliffe's involvement in landscape design has made their interiors more sensitive to the outdoors.

hroom Addition, House in Toronto
nto, Ontario
n-Sutcliffe, Architect

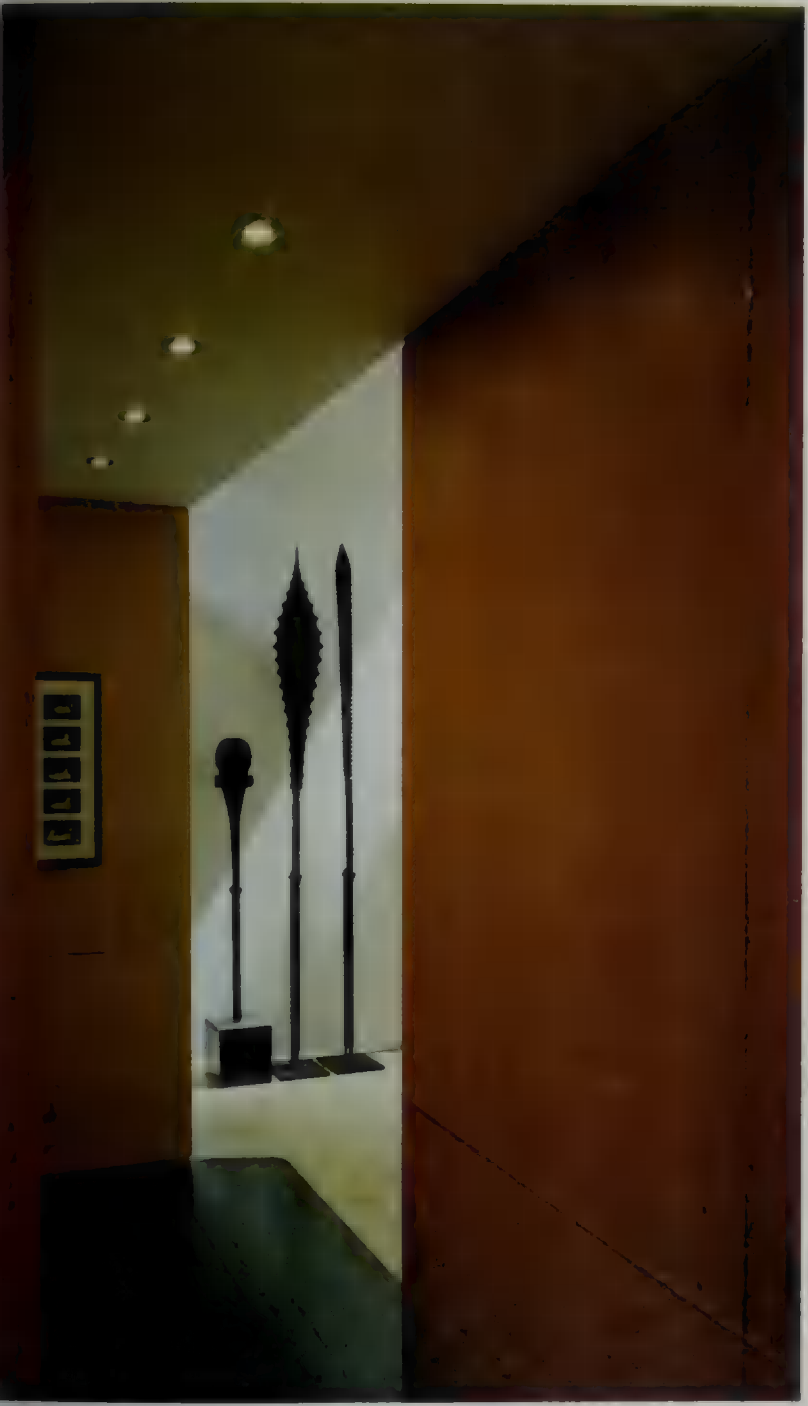
ichael Awad photos

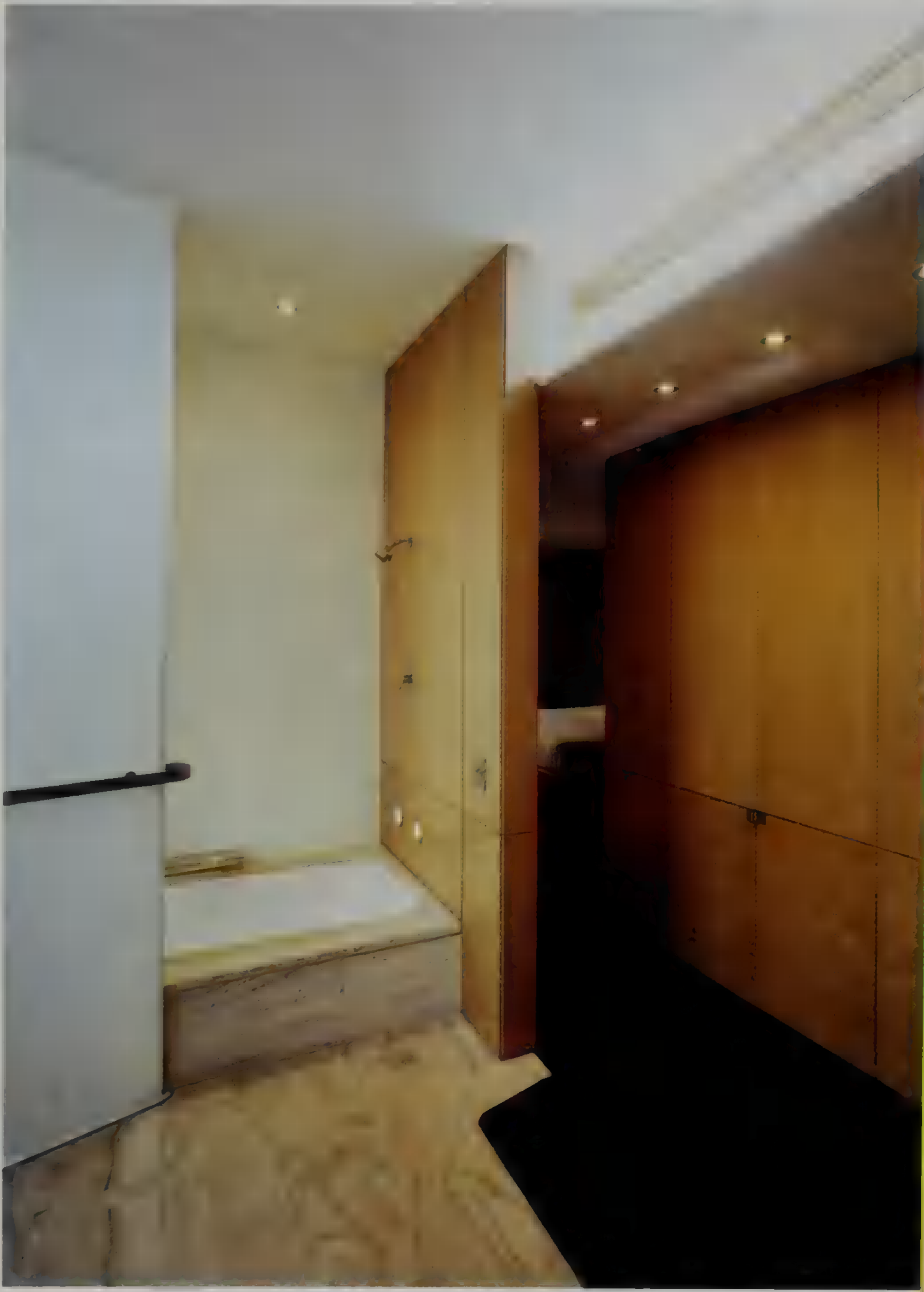


Light comes into the new bathroom from custom-made frameless skylights, narrow windows, and sandblasted glass (above). Rounded corners and gently curving lines contrast with the rectilinear quality of the existing house. Materials used in the bathroom include French limestone floors, anigre and burl-maple cabinets, and Venetian plaster on the walls.



One of the pleasures of this project, notes Shim, was having "the opportunity to explore several different scales"—from shaping the surrounding landscape to designing drawer pulls and faucet fixtures (drawings above). "We've always been interested in craft and we're lucky enough to be in a city like Toronto, which has a great stock of skilled craftspeople." The graceful curve of the faucet spout is reinforced by the sheet of water it releases. While the curves and light colors of the bathroom help give the room i own identity, the architects bo rowed a few elements from th old parts of the house in the entry to the bathroom—inclu ing ebonized wood floors and anigre-wood cabinets (opposit right). The presence of Africa art also connects the bath to th rest of the house (opposite left





edits
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onto
hitect: *Shim-Sutcliffe—*
gitte Shim, Howard Sutcliffe,
tners-in-charge; Donald
ung, presentation drawings
gineer: *Frank Toews*
echanical)
nsultants: *Suzanne Powadluk*
sign (lighting); Nelson
rrett Lighting (custom
ting); Takashi Sakamoto
(hardware and faucet
fabrication); Edile (custom
plaster); Steve Bugler, Radiant
City Millwork (millwork)
Builder: *Tony Azevedo*

FOR ARCHITECTS IN THE INFORMATION AGE

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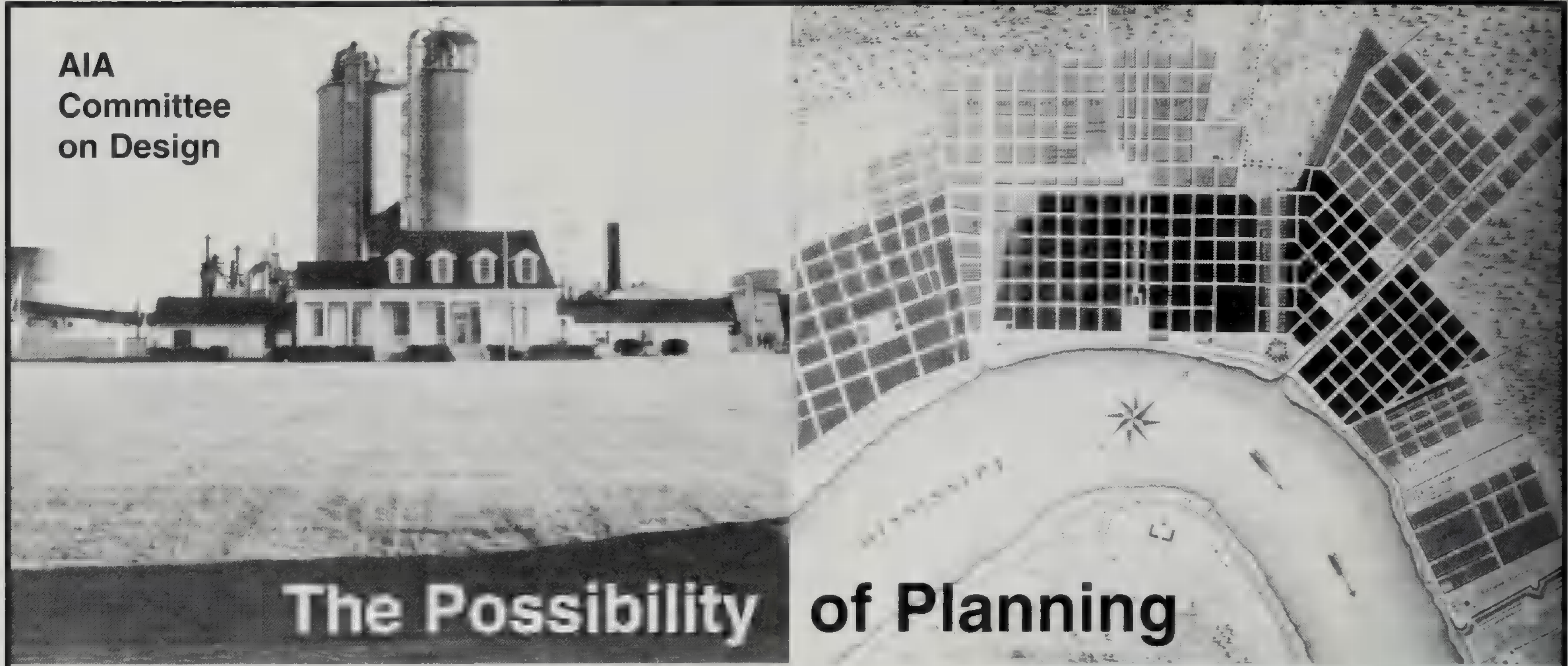

AIA Committee on Design

The Possibility of Planning

Preservation, Economics, Default
— From the River Road to the Vieux Carré

October 10-13, 1996
New Orleans

The 1996 National Design Conference culminates the Committee on Design's far-ranging exploration "Changing American Landscapes: the View from the River" in an examination of the altered meanings of place and time in the built landscapes of New Orleans and the surrounding region. The committee, under the auspices of the Tulane University School of Architecture, will conduct symposia dealing with resent impacts of economic change, mobility, technology, and the media on design and designers in the emerging urban and rural contexts of the 21st century. Speakers include geographer/ author J.B. Jackson, historian Dolores Hayden, and photographer Alex MacLean. Events will include a mayor's reception, tours of historic and revitalized New Orleans neighborhoods, and a closing dinner at Madewood Plantation.

Please call the PIA information line at (202) 626-7482 for a registration form or additional information.

The conference is registered with the AIA's CES program. Participants will earn up to 40 learning units.

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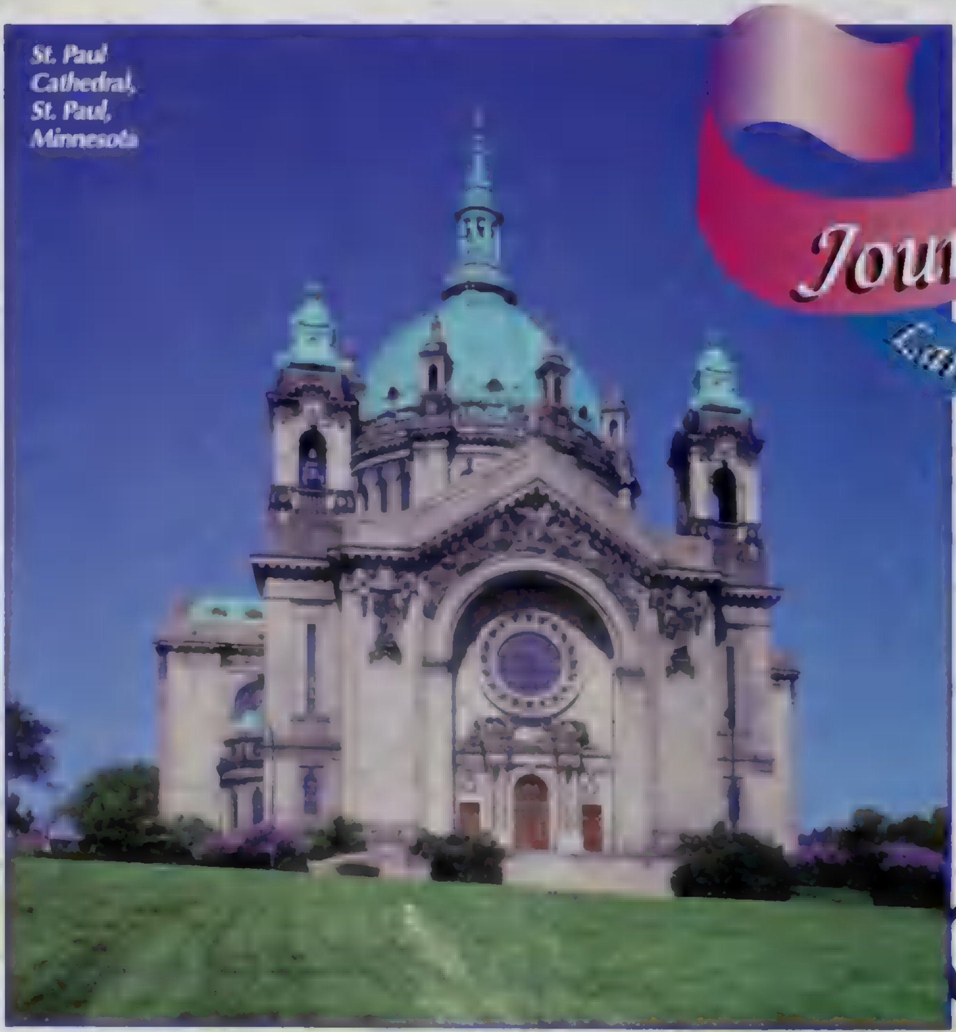

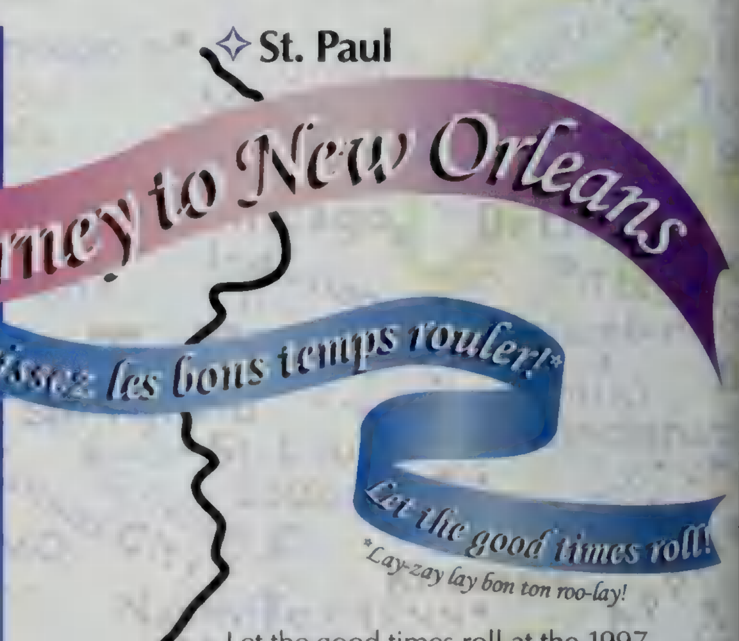

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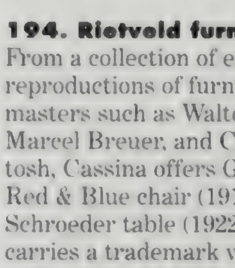
192. Commercial resilient floors
A 60-page catalog describes the features and benefits of all Armstrong commercial floor products, and illustrates each pattern in retail, healthcare, and similar settings. A selection chart matches the requirements of a particular space with the most appropriate flooring options. Technical data included. 800/292-6308. Armstrong World Industries, Lancaster, Pa.



194. Rietveld furniture
From a collection of estate-authorized reproductions of furniture by modern masters such as Walter Gropius, Marcel Breuer, and Charles Mackintosh, Cassina offers Gerrit Rietveld's Red & Blue chair (1918) and his Schroeder table (1922). Each piece carries a trademark vouching for its authenticity. 516/423-4560. Cassina USA, Huntington Station, N.Y.
* *Product Data on CAD disk*

193. Furniture with Italian flai
B&B's newest catalog collects new
and classic designs under a *Comfor*
Zone heading. All seating is intende
for relaxed in-home settings—loung
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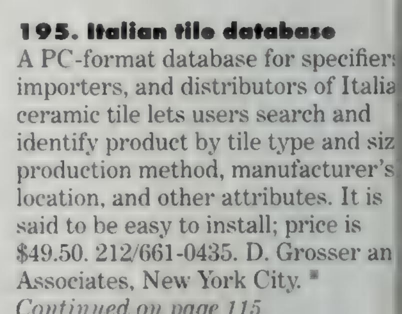
an armchair with a pull-out footrest
and a sofa with adjustable back and
arms. All dimensions and upholster
options given. 800/872-1697. B&B
Italia, USA, Inc., New York City.



195. Italian tile database
A PC-format database for specifier
importers, and distributors of Italia
ceramic tile lets users search and
identify product by tile type and siz
production method, manufacturer's
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said to be easy to install; price is
$49.50. 212/661-0435. D. Grosser an
Associates, New York City. ▪

Continued on page 115

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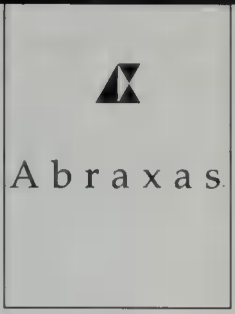
Product Literature

6. Greek marble Web site
 new promotional effort for archiects and other stone specifiers, a Veb site supplies photos of all Greek arbles, with their mechanical and hysical properties. Distributors of ach stone are listed state-by-state; arble producers will have a page etailing specific products: www.hepgreektrade.com/marble (Web page) reek Trade Commission, Chicago.



197. Hand-crafted furniture
A 20-page catalog illustrates current productions of Californian Glendon Good, who designs "useful forms": screens, seating, tables, and shelving in aluminum, glass, and leather. Detail drawings give dimensions and sectional views; all furnishings are shown in color. Fax requests to 510/841-4032. Abraxas, Berkeley, Calif.

98. Tile-setting materials
hin-set mortars, adhesives, addives, tile cleaners and sealers, and routs are described in a 12-page rchitectural catalog. Products are rouped by service requirements, NSI specification, and the type of le installation (vitreous, semi-vitreus, impervious, or marble). Grouts hown in all colors. 800/334-0784. V.R. Bonsal Co., Charlotte, N.C.

199. Steel windows and doors
A new, 20-page portfolio explains the esthetic and functional advantages of steel window and door systems. Discusses fire ratings and landmark considerations, and compares profiles and sight lines. Photos illustrate how steel units contributed to the appearance of offices, homes, schools, and stores. 716/665-5124. Hope's Architectural Products, Inc., Jamestown, N.Y.

00. Signage systems
n architectural signage catalog has 8 pages on "effective signing," suggesting identification devices and raphics that reinforce a design nage throughout a facility. Signs and irectories can be ordered in several aterials and almost any finish; ADA nd other requirements are explained. 941/355-5171. Scott Sign Systems, nc., Tallevast, Fla.

201. Latex metallic paint
A new low-VOC, water-based decorative coating for use on primed or previously painted interior surfaces, Chromatone Stabilized ready-mixed metallics come in silver, pale gold, rich gold, copper, and Roman gold. Color chart and packaging specs: 800/445-6810. Crescent Bronze Powder Co., Inc., Chicago.

Continued on page 118

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Manufacturers' Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 72-77
f/X Networks Corporate Headquarters
Fernau & Hartman Architects
Labeled doors: Republic. Conference doors: U.S. Aluminum. Locksets: Sargent. Acoustic ceilings: Armstrong World Industries; Illbruck. Cabinetry: Fred K. Anderson & Sons, Inc.; Jeffrey Trott Industries. Cabinet hardware: Forms+Surfaces; Grant; Doug Mockett & Co. Cork flooring: Dodge Regupol, Inc. Stools: ICF. Chairs: Emeco. Banquette: West Coast. Carpeting: Design Weave. Sling chairs, table: custom by architects. Conference-room seating: Via. Fluorescent troffers: Columbia. Downlights: Edison Price. Fluorescent fixtures (exposed ceiling): Zumtobel. Office ambient fixtures: Neo-Ray; task lighting: Luxo; Adjustable Fixture Co.

Pages 78-80
Art Gallery, Clark Atlanta University
Scogin Elam & Bray, Architects, Inc.
Triple-hung wood windows: Simpson Millwork. Flooring: Rift-cut red oak, tung-oil finish. Custom color paint: Duron. Barn-door fixtures: Halo.

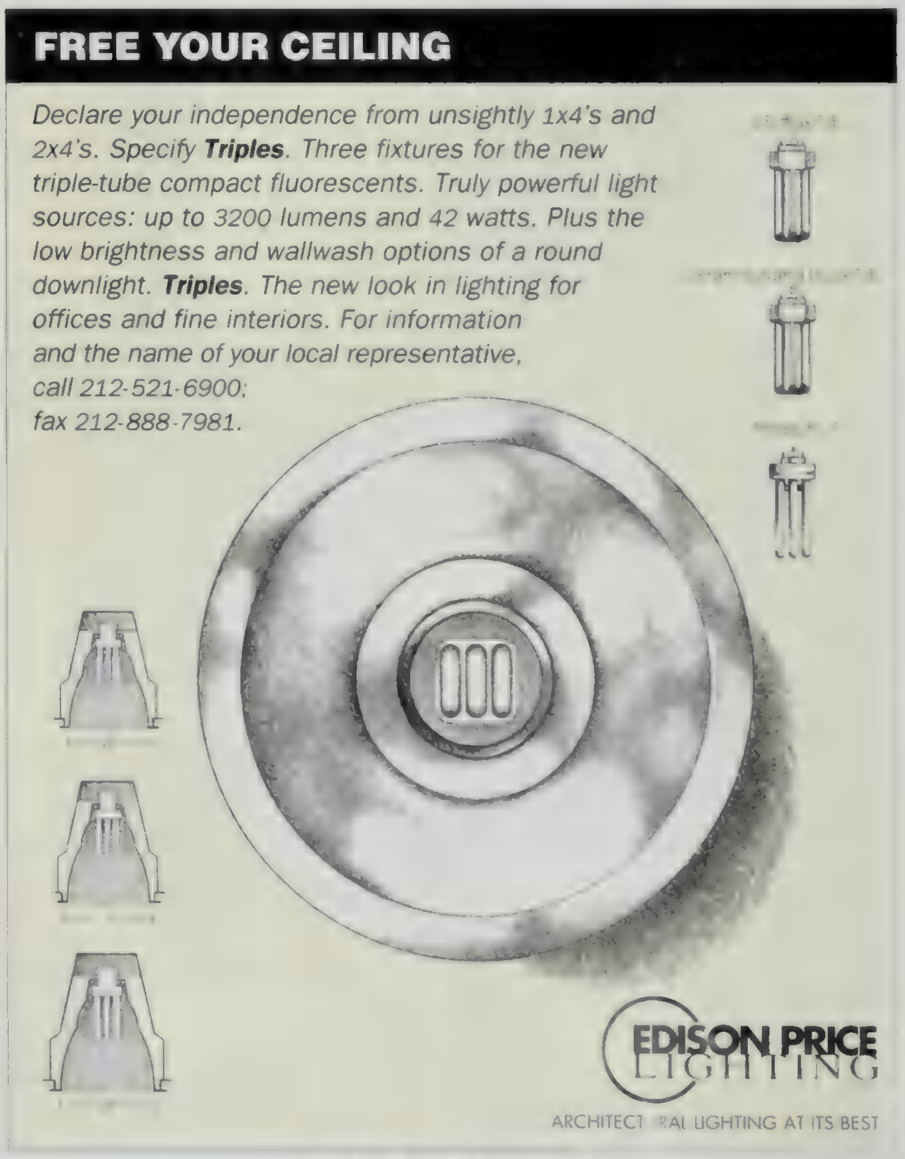
Pages 81-83
Don and Sylvia Shaw Salon & Spa
Downlights with decorative disks: Diskus. Phenolic-finished birch plywood paneling and interior doors: Finland Color Plywood Corp., fabricated by Dowlen Lloyd Custom Woodwork. Lever locksets: Schlage Lock Co. Full-length hinges: Select Products Limited. Laminated glass: ASG Industries. Storefronts and entrances: Amarlite. Closers: LCN. In-floor uplight: Hydrel (9000 Series).

Pages 84-91
The Science, Industry, and Business Library
Gwathmey Siegel & Associates, Architects
Wood windows and rift-cut white oak paneling: Rimi Woodcraft. Aluminum storefronts, entrances, and ornamental metalwork: Allied Bronze. Locksets: Yale. Butt hinges: McKinney. Overhead closers: Rixson. Exits: Von Duprin. Pulls: Quality. Fire doors: Atlas. Acoustic finish: Pyrok. Ceiling tile and resilient flooring: Armstrong World Industries. Paints: Benjamin Moore & Co. Laminate surfaces: Nevamar. Epoxy-terrazzo floors, walls, and column treatments: Port Morris. Stainless-steel paneling: Allied Armstrong. Broadloom and carpet tile: Collins & Aikman. Access floor: C-Tec. Reading tables: Textus Group, Inc. Library shelving: Montel. Downlighting: Edison Price. Dimming controls: Lightolier, Inc. High-density shelving system: Spacesaver, Inc. LED signage: Sunrise Systems. Elevators: Otis.

Pages 98-101
U West, U.S. Robotics
Valerio Train Dewalt Associates, Inc.
Entrances: Kawneer Co., Inc. (TriFab). Locksets and exits: Yale. Pulls: Rockwood. Paints: Benjamin Moore & Co.; Sherwin Williams. Acoustic ceilings: USG Interiors, Inc. Birch-veneer paneling and granite-topped reception desk: Wm. Huber Cabinet Works, Inc. Sandblasted glass partitions: Christopher Glass. Ceiling fixture (conference): Artemide, Inc. (Mikado). Office furniture system: Kimball. Lobby flooring: Forbo. Carpeting: Lees Commercial. Linear fluorescents: Zumtobel. Cylindrical fixtures: I.C.E. Custom metal-mesh ceiling: fabricated by P.I.W. Corp. Downlighting: Halo.

Pages 102-103
Bus Wellness Center
Steven Ehrlich Architects
Laminate on custom cafe tables and espresso bar: Formica Corp. Cafe chairs: West Coast Industries Tables: custom by architect. Signlight fixtures (lobby): USI Columbia. Track lighting: Lightolier, Inc. Green stain over OSB: Frazee. Cast-glass counter: designed and fabricated by Philip Vourvoulis, Glass Tech. Sectional interior doors: Finishline. Lever-handle locksets, closers: Cal-Royal. Hinges: Hager. Acrylic-glazed skylights: Bristolite Colored concrete: L.M. Scofield. Northern hard maple gym floor: Horner Flooring Co.

Pages 104-107
Bathroom Addition, House in Toronto
Shim-Sutcliffe, Architect
Wood windows and skylights, Anigre and burl maple cabinetry and paneling: custom, fabricated by Steve Bugler, Radiant City Millwork. Sandblas ed mirror: Clo Glass. Pulls and faucets: fabricated by Takashi Sakamoto. Shower fittings: Speakman. Stucco Veneziana (plaster): Edile. Cabinet hinges: Blum. Slides: Accuride. French Limestone floor: Enmar Natural Stone. Mirror light: Eurolite. ■



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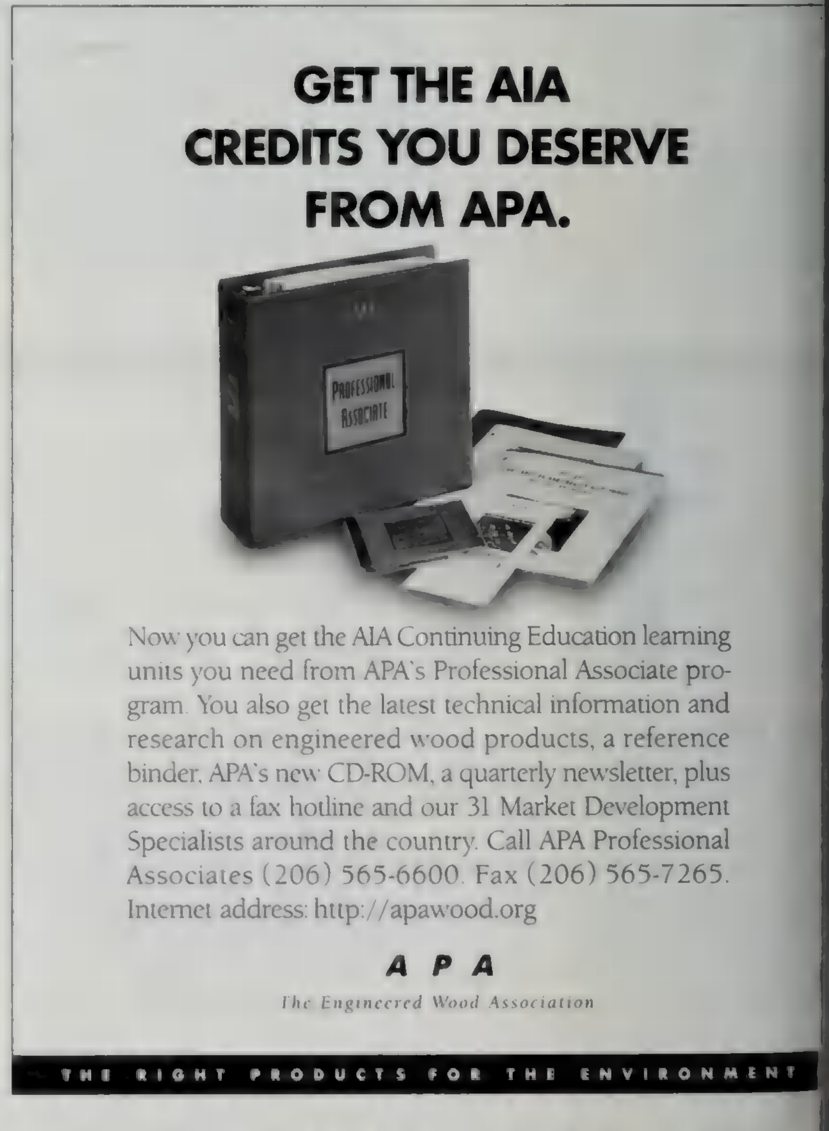

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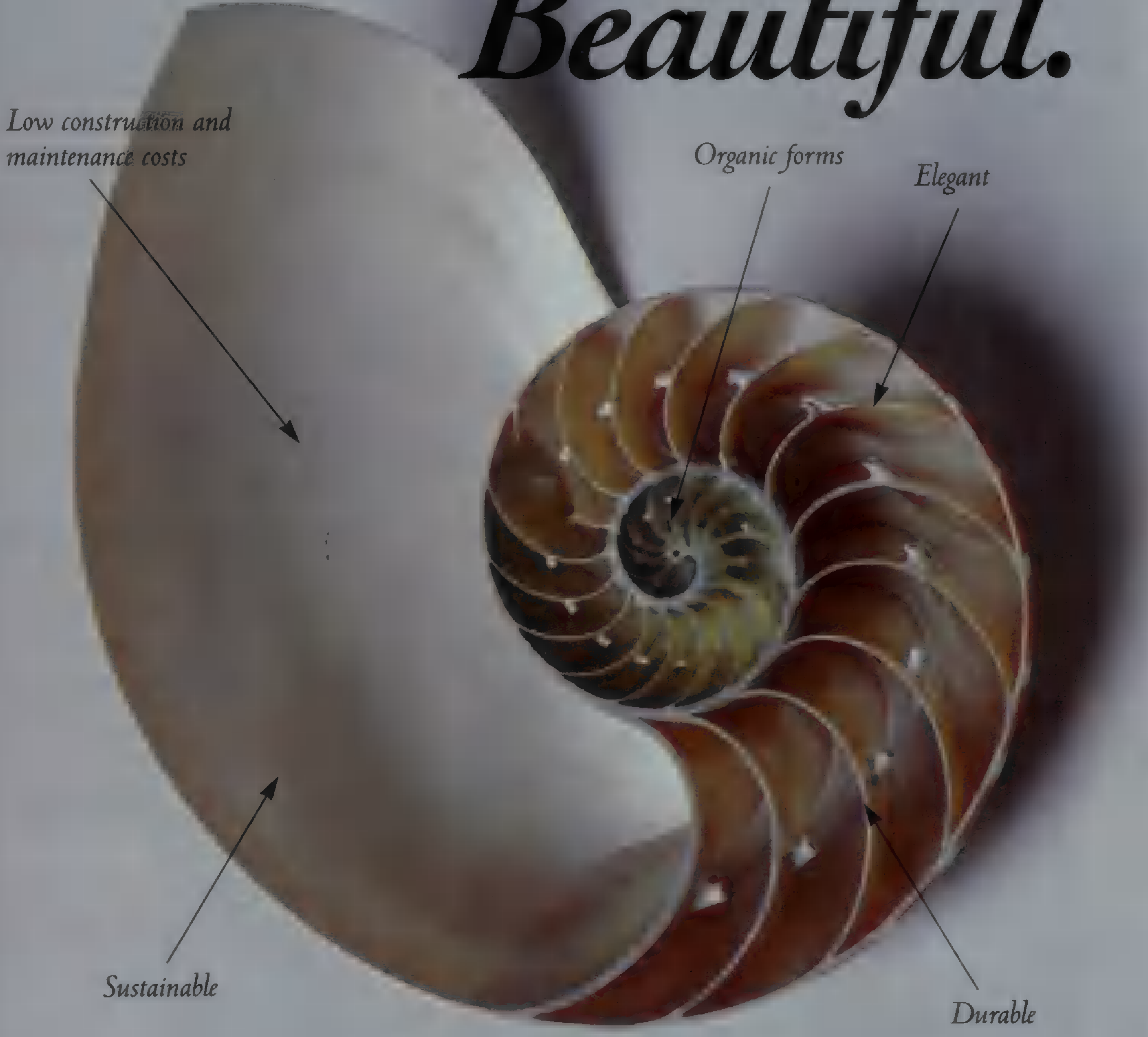

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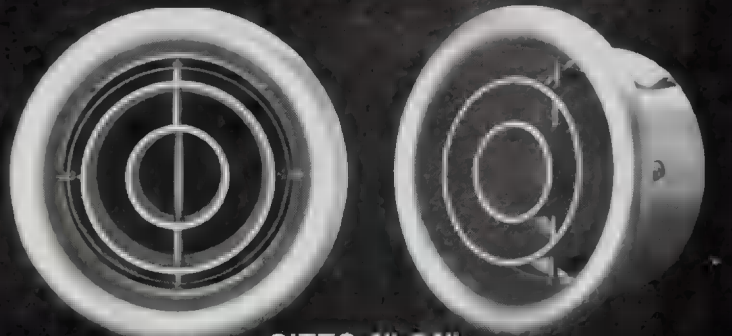

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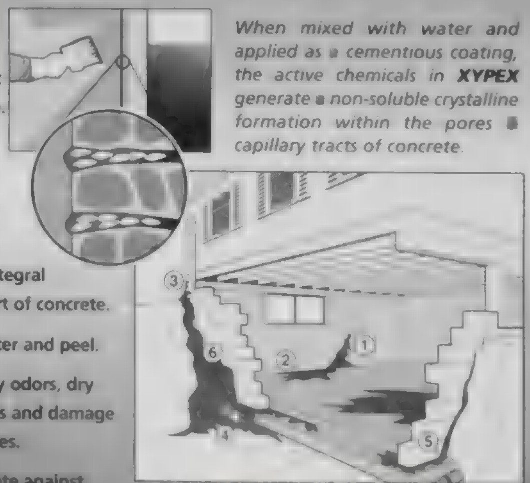

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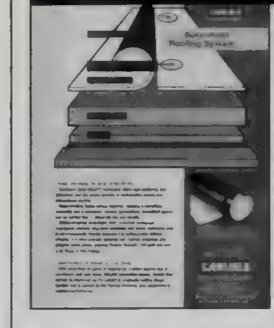

202. Heat-welded polyolefin

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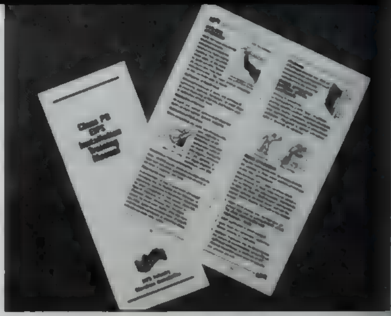
203. Fire-rated aluminum door

An architectural brochure describes the vision-light, finish, and extruded-frame options offered by Raco aluminum doors for commercial and institutional interiors. Glazed with Superlite I wireless glass, doors can carry a 20-minute fire rating (pairs single units). Frame details available in DXF format. Ragland Mfg. Co., Houston. *

204. Not just battleship gray

A new Color Guide introduces a palette of 60 paint shades—including purples, reds, yellows, and micas—available as a standard chip-resistant electrostatic finish on this maker's files and storage products. Selected to reflect future design trends, color lets files contribute to the interior design scheme of an office. Office Specialty, Holland Landing, Ont.



205. EIFS application tips

A 24-page pamphlet recommends procedures and gives guidelines for applying Class PB exterior insulatio and finish systems, as well as tips fo filling voids in insulation boards, rasping, backwrapping, creating tex tures, and using sealants. Contains glossary of over 30 EIFS terms. Fa requests: 813/726-8180. EIMA, Clearwater, Fla.

206. Expansion joints

A 28-page brochure introduces Seis-MaxPlus, Accent ADA, Weather-Seam, and StadiaFlex—the newest Watson-Bowman-Acme joint systems for engineered structures. Illustrates covers that simulate granite, marble, or tile, as well as plates in aluminum, brass, bronze, and stainless steel. 800/537-4722. Harris Specialty Chemicals, Inc., Jacksonville, Fla.

207. Swimming-pool equipmen

A catalog groups pool-deck and underwater equipment into function al groups for different competitive-swimming and recreational applications. Products include the Track Start platform, portable lifeguard chairs, and railings; drawings detail all products. Also in AutoCAD format. 914/769-6221. Paragon, Pleasantville, N.Y. * ■

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RECORD HOUSES 1997

The editors of ARCHITECTURAL RECORD announce the 42nd annual RECORD HOUSES awards program. This program is open to any registered architect. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. Work previously published in other national design magazines is disqualified. There is an entry fee of $15 per submission; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8-1/2- by 11-in. folder—and be postmarked no later than October 31, 1996. Winning entries will be featured in the 1997 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

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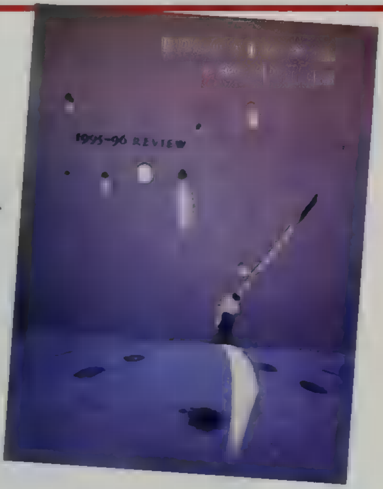

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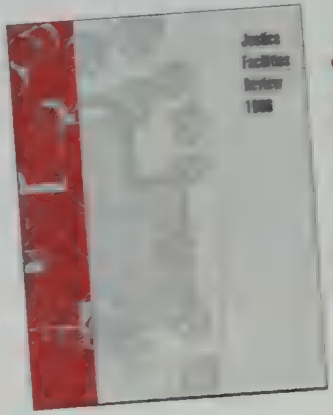

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Calendar *continued from page 8*

There is a $75 fee for ARCHITECTURAL RECORD subscribers and Cooper-Hewitt members; $35 for students; $100 for all others. To register, call the Cooper-Hewitt at (212) 860-6321.

November 2-3

The Institute for the Study of Classical Architecture and *Traditional Building* magazine are holding a seminar on "Classical New York, Classical America." On the first day, prominent professionals and educators will talk about subjects ranging from "Townhouse Design in New York (Mark Hewitt) to "The Archeology of New York" (Celia Bergoff, New York University) to "The Clubs of New York" (Gary Brewer, Robert A. M. Stern Architects). These lectures will be in the Tishman Auditorium, Vanderbilt Hall, NYU School of Law. On the second day, hands-on workshops and demonstrations, and walking tours will cover the Great Interiors of New York, the Clubs of New York, Drawing Classical Ornament (workshop), and the Classical Order of Architecture (workshop), among other topics. That day's activities take place at the Real Estate Institute at NYU's 11 West 42nd St. location. Registration is $95 per day, or $195 for both days. Call Judith Lief at 718/636-0788 for more information, or fax her at 718/636-0750.

November 7-9

Interplan '96 will hold its (formerly Designers Saturday) show at the New York Coliseum, with seminars and an interior-design and planning exposition. The A&D building also plans to expand exhibitor space at its West 58th St. location. Call 800/950-1314, ext. 2611 for more information.

Through January 19, 1997

"Three Buildings by Frank Lloyd Wright: American Spirit Alive in Japan" traces the history of the only three non-U.S. buildings Wright designed and built: the Imperial Hotel, Yamamura House, and Jiyu Gakuen Myonichikan School. Through photos, drawings, models, and correspondence, the exhibition explores the context for each building. At the National Building Museum, Washington, D.C., 202/272-2448, fax 202/272-2564.

Competitions

◆ The "Inside out Outside in" competition for the AIA San Francisco interior-architecture awards are due Sept. 15. Entrants from the nine-county Bay Area can submit projects built anywhere; non-Bay Area architects must submit projects built in the nine-county area within the last two years. Call AIASF at 415/362-7397 for a call-for-entries form.

◆ "Unbuilt Architecture" competition submissions are due Sept. 26. Entry fee is $50 for each submission. Call Boston Society of Architects, 617/951-1433 ext. 232, for details.

◆ A competition to design Greenport (Long Island, N.Y.) Waterfront Park and Harbor Walk offers up to $20,000 plus a commission to further develop the winning design. Registration closes Oct. 4; submissions must be postmarked by Nov. 8. Call 516/477-3000, fax 516/477-2488 for more information.

◆ Society of American Registered Architects (SARA) invites architecture students to submit work done in conjunction with a school or independently. Entrants must register by Oct. 6, and submit projects by Oct. 13. Call 708/932-4622 for details.

◆ International Making Cities Livable Conferences is calling for submission of papers and exhibit proposals by Oct. 15. The first IMCL conference will be March 8-12, 1997, i Charleston, S.C.; the second April 15-19 in Santa Fe, N.M. Call Suzanne H. Crowhurst Lennard at 408/626-9080 for details or fax he at 408/624-5126.

◆ Shinkenchiku Residential Design Competition entries, which will be judged by Jean Nouvel, are due Oct. 18. Contact Shinkenchiku-sha Co., Ltd., 31-2 Yushima 2-chome, Bunkyo-ku, Tokyo 113, Japan.

◆ Submissions to the biannual Rudy Bruner Award for Excellence in Urban Environment are due Dec. 13. First-prize winner receives $50,000; honorariums of $1,000 go to each of four additional finalists. Contact Bruner/Cott & Associates for an application form or more information at 130 Prospect St., Cambridge, MA 02139; phone 617/492-8400; fax 617/876-4002. ■

Corrections and Clarifications

◆ Several names should have been included in the credits for Casa Italiana [ARCHITECTURAL RECORD, July 1996, page 82]: Jon Ambrose, Luis Estrada, Janier de la Garva, Sara Kaplan, Anatole Plotkin, Robert Wildermuth, project team; F. J. Sciame Construction Co., Inc., construction manager.

◆ The Computer Delineation award for the Landa residence [RECORD, June 1996, page 50] should have included the names of Cameron Crockett and Mark Sich, both with Morphosis at the time the project model was built, as delineators.

◆ The illustrations for the Berlin Embassy [RECORD, March 1996, pages 36-43] should have been credited to the following perspectivists: BCJ and Swerdrup, drawn by Lebbeus Woods; Moore Ruble Yudell with Gruen Associates, drawn by Douglas Jamieson; Kallman McKinnell & Wood, drawn by Steve Oles. ■

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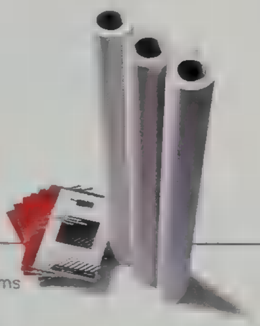

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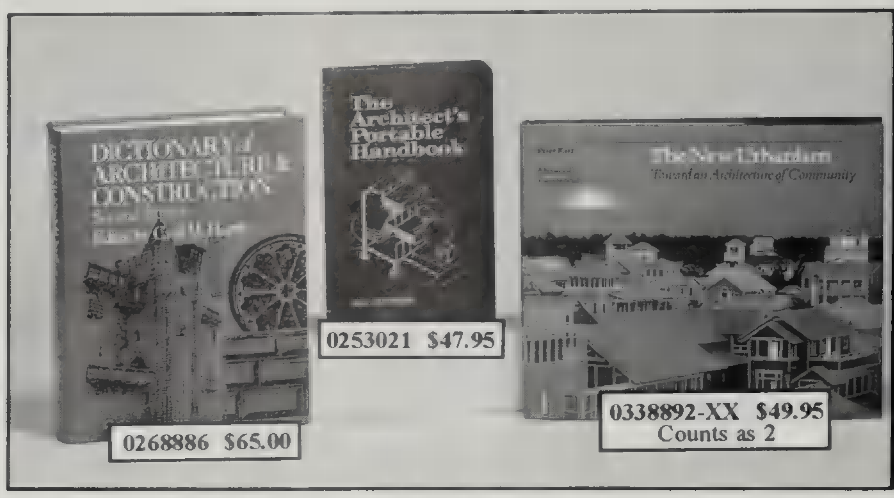
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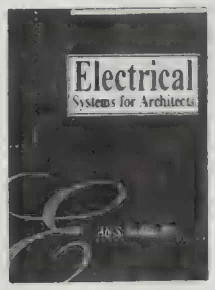

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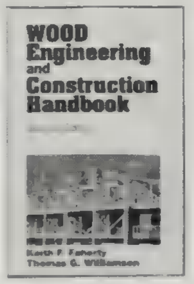

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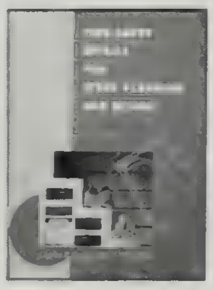

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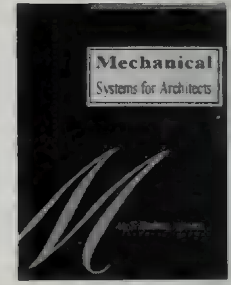

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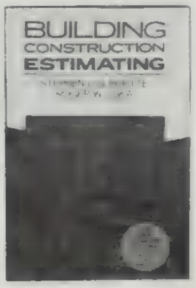

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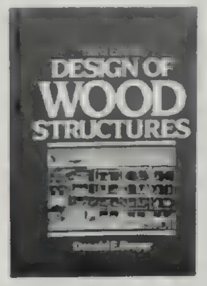

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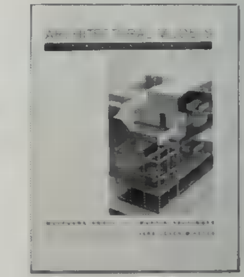

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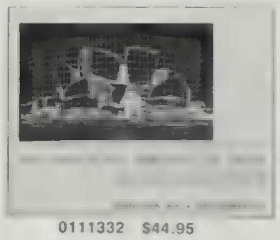

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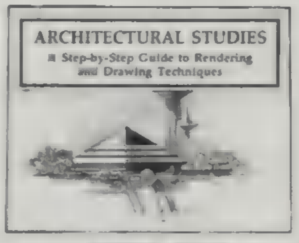

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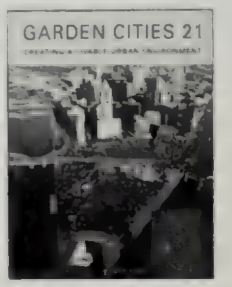

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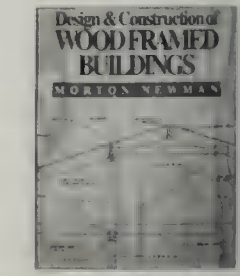

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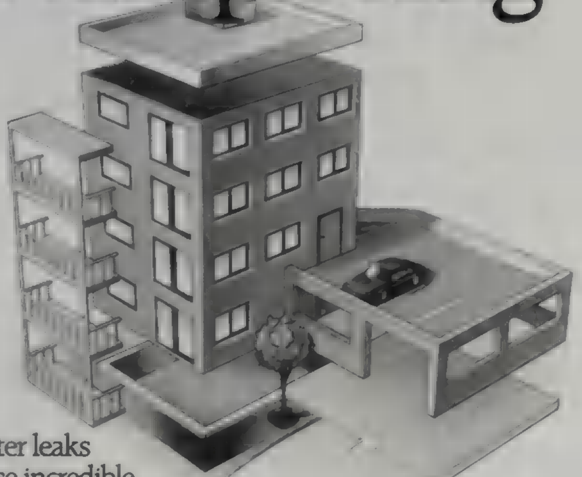

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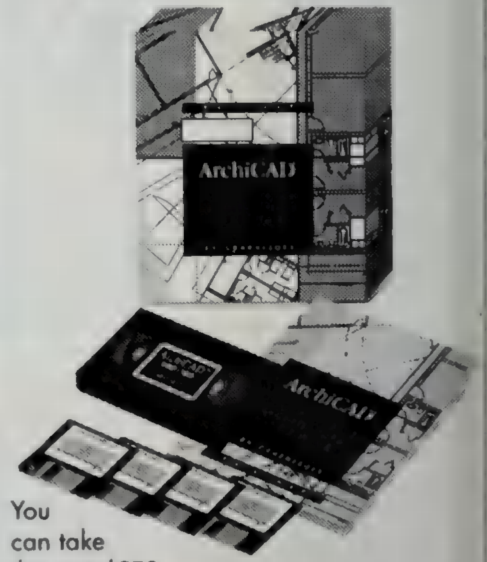

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ms *continued from page 43*

ston-based alumnus of Benjamin Thomp- Associates to form Wood and Zapata. dani moved on in 1994 to become design ector of Dworsky Associates, and has ped raise the profile of the Los Angeles- sed firm. Ellerbe Becket recently closed its w York City office, and has focused on its ditional strengths: health care, corporate ilities, and academic work.

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another firm is embarking on the path t Ellerbe Becket pioneered 10 years ago l, intriguingly, with a similar cast: Seattle- sed NBBJ. Not only has Pran moved there a principal but, just a few months ago, the n lured Mike Hallmark, Dan Meis, and n Turner, whose signature sweeping roof- es had given Ellerbe-Becket a high profile sports-facilities design after Hallmark and is had moved to the firm from HNTB. ey are heading up a sports-facility and ertainment-focused office in Los Angeles.

e firm has also added Jack McAllister to d its San Francisco office. He had been sident of Anshen + Allen, a California- sed firm that often competed with NBBJ health-care work. "We're shifting into a re aggressive market- and firm-building ategy," explains James Jonassen, partner l CEO of NBBJ's Western operations. is is to be accomplished in two ways: by ting into new markets (NBBJ has also n affected by the health-care slump) and building the design profile of the firm.

s the latter area where Pran comes in. "He ls another voice to our design dialog," says nassen, "and we're stretching that dialog m one end to the other." McAllister, with experience with projects ranging from uis Kahn's original Salk Institute project Anshen + Allen's recent addition repre- its the "other" with his "thoughtful and ll-executed work," says Jonassen.

an took with him a major project—the 50- ry Graha Kuningan tower in Jakarta—on ich he was the design principal. Pran is ely to be joined at NBBJ on this project by er New York City designers he nurtured. an will focus on NBBJ's overtures in Asia, will also be involved in projects among firm's five other offices in the U.S. nassen observes that Pran will be crucial in Far East, where clients seek name signers. "We can compete effectively with K, but not with Pelli," says Jonassen. eter's name has value in that marketplace, l he can open doors."

Merging service and design cultures

Is NBBJ restructuring to become some fundamentally different kind of firm? "This is not a sea change," replies Jonassen. "These changes absolutely fit into a strategy we have been following for eight or nine years, when we said our vision is to be the best design firm in the world." Jonassen feels the firm can support this vision through "a studio approach that balances design, technology, process, and communication."

With design not so high on many clients' agendas, would NBBJ be wiser to follow McClier's path? The two firms' approaches seem to differ more in degree than in fundamentals. "We pioneered the expanded-services approach in the 70's," says Jonassen. "We were the first strong group to do financial analysis; we are doing some program management and some construction management." But the firm feels it will be more successful by remaining all-architecture. He says NBBJ never accepted the split conceptualized by management consultant Weld Coxe, who has urged firms to choose whether they are a business-focused practice or a practice-oriented business. "You've got to recognize the business climate and what clients want," he explains, "but that doesn't mean you don't want to deliver the best-designed product. Our view is 'best in product, best in service.' "

Is there a moral in the experience of McClier, Ellerbe Becket, and NBBJ? For now it is that they are confident enough to try new directions, and if those don't work, to try another way. But how successful these approaches turn out to be a few years hence may say a great deal about where the profession is going. *M. J. C.*

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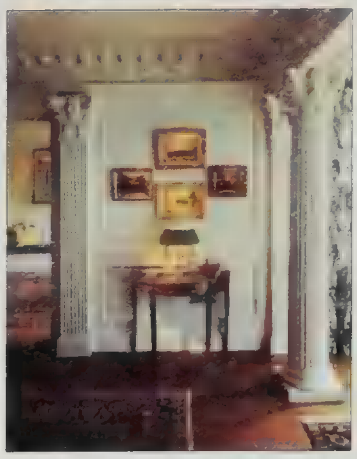

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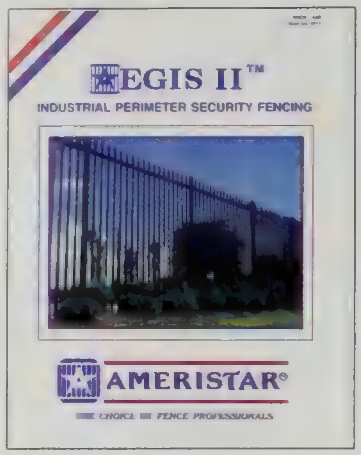
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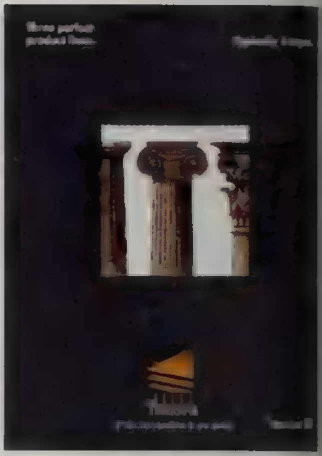

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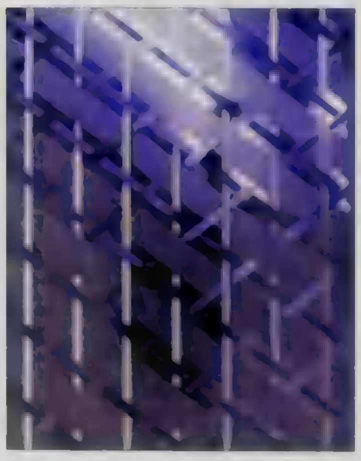

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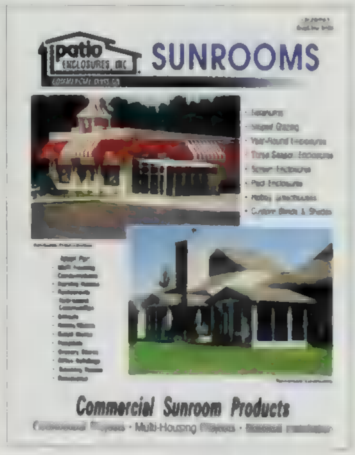

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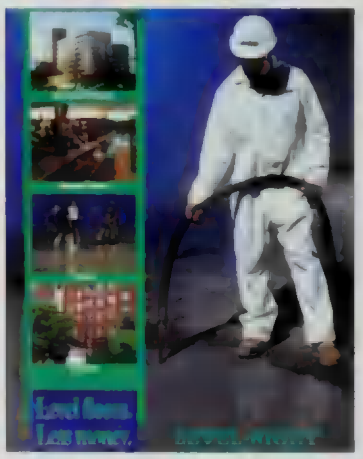

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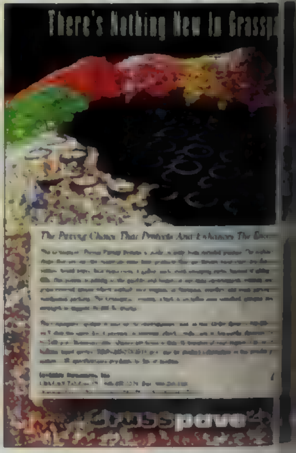

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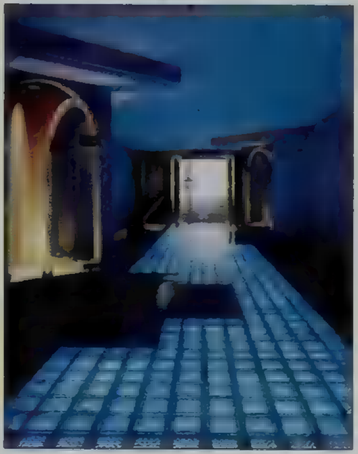

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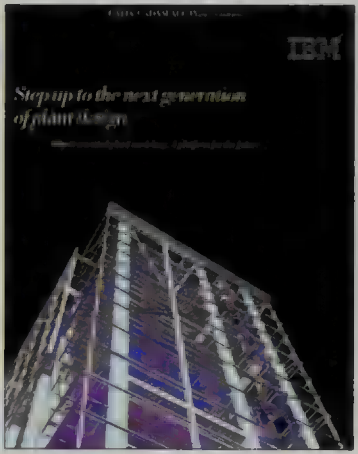

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AIA/Architectural Record Continuing Education

Use the following learning objectives to focus your study. After reading the article, "Quiet Progress in Managing Environmental Toxins" (page 48), complete the questions and check your answers (page 134). AIA members may fill out the self-report form and send it in to receive two learning units.

Mark Scher
AIA Director, Continuing Education Programs and Products

Learning Objectives:
After reading the story and completing the exercise below, you will be able to:
◆ Evaluate the implications of lead-based paint and asbestos in buildings regarding 1) health/safety issues of these toxic substances; 2) the pros and cons of management versus complete removal and replacement.
◆ Explain a process for managing the presence of radon.
◆ List a designer's strategy for mitigating electromagnetic field radiation problems.

QUESTIONS

1. Your client on a renovation project wants to know his options for managing lead-based paint problems for a property he acquired. What are the pros and cons of the three strategies for minimizing the risk of in-place lead?

Answer: 1. ______________________________
2. ______________________________
3. ______________________________

2. If you are "rehabbing" a small office building constructed in the late 1970s, what assumption might you make regarding materials that might contain asbestos?

Answer: ______________________________
____

3. What are two options and attendant points to remember in dealing with the presence of asbestos?

Answer 1. ______________________________
____
2. ______________________________
____

4. An owner wishes to replace the resilient tile floor in the lobby of an older building. Though OSHA regulations categorize this asbestos-containing material as non-friable, and it is not releasing asbestos fibers, why are removal costs a factor?

Answer: ______________________________
____

5. What procedure is suggested when short-term testing indicates elevated levels of radon?

Answer: ______________________________
____

6. What implications do electromagnetic fields have for designers?

Answer: 1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

For answers and self-report form, turn to page ***134***

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Classified Ads Continued on Pages 136, 137

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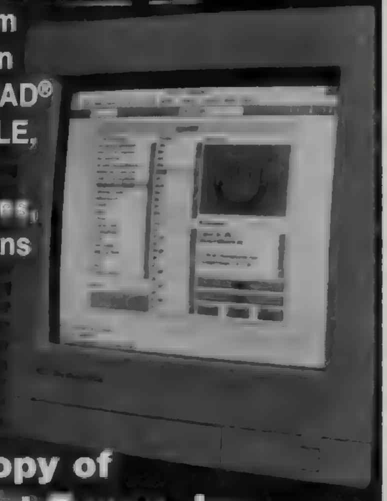

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AIA/Architectural Record Continuing Education

Questions on page 133

Answers

1.1. Strategy: removal/replacement of original material. Pro: the only way to completely eradicate lead. New Dry Ice process offers promise for exteriors. Con: difficult and expensive procedure and requires protection of workers doing removal. Chemical strippers may leave residue; mechanical strippers depend on proper operation; heat generates fumes.
2. Strategy: encapsulation. Pro: government regulations accept if coating can last 20 years. Costs are usually lower than removal. Con: possible hazard during future alterations.
3. Strategy: encasement with rigid material. Pro: Considered more secure than encapsulation. Con: architectural details may be lost.

2. You might assume that all thermal insulation and surface materials are friable while wallboard, floor tile, roofing, siding, and construction mastics are not friable.

3. The main point is to remember to monitor for disturbances, impacts, or other damage that may cause fibers to come loose in asbestos-containing material. After that, consider a) removal/replacement (best approach for readily accessible material); b) encasement (but test that additional weight won't pull fireproofing loose and that the encasement does not reduce fire-retardant properties).

4. For any building alteration that affects asbestos-containing material, federal regulations dictate that the material must be removed by trained workers and landfilled in a suitable hazardous-waste facility.

5. a) Verify problem with further testing; b) if radon is present, seal areas that have ground contact; c) increase ventilation to areas with ground contact.

6. The most obvious design considerations are 1) site selection away from high-voltage lines; 2) locate user areas, particularly ones with high computer use, away from power supply; 3) test spaces prior to design with gaussmeter; 4) consider alterations to electric wiring to reduce current loops.

Self-Report Form below

AIA/CES Self-Report Form (FOR ARCHITECTURAL RECORD USE ONLY)

Member information:

LAST NAME FIRST NAME MIDDLE INITIAL OR NAME

AIA ID NUMBER

Program/project title: **Architectural Record: Quiet Progress in Managing Environmental Toxins (9/1996)**

Completion date: ______ /______ /______
MONTH DAY YEAR

Quality Level (QL) of this program: This article will give you a total of 2 LUs at Quality Level 2

Quality Level for this article is 2. (Refer to learning objectives on page **133**). **Material resources used:** Journal article.

This program addresses issues concerning the health, safety, or welfare of the public.

I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

SIGNATURE DATE

Send completed form to:

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Norman, OK 73072-6400; Fax, (405) 325-6965
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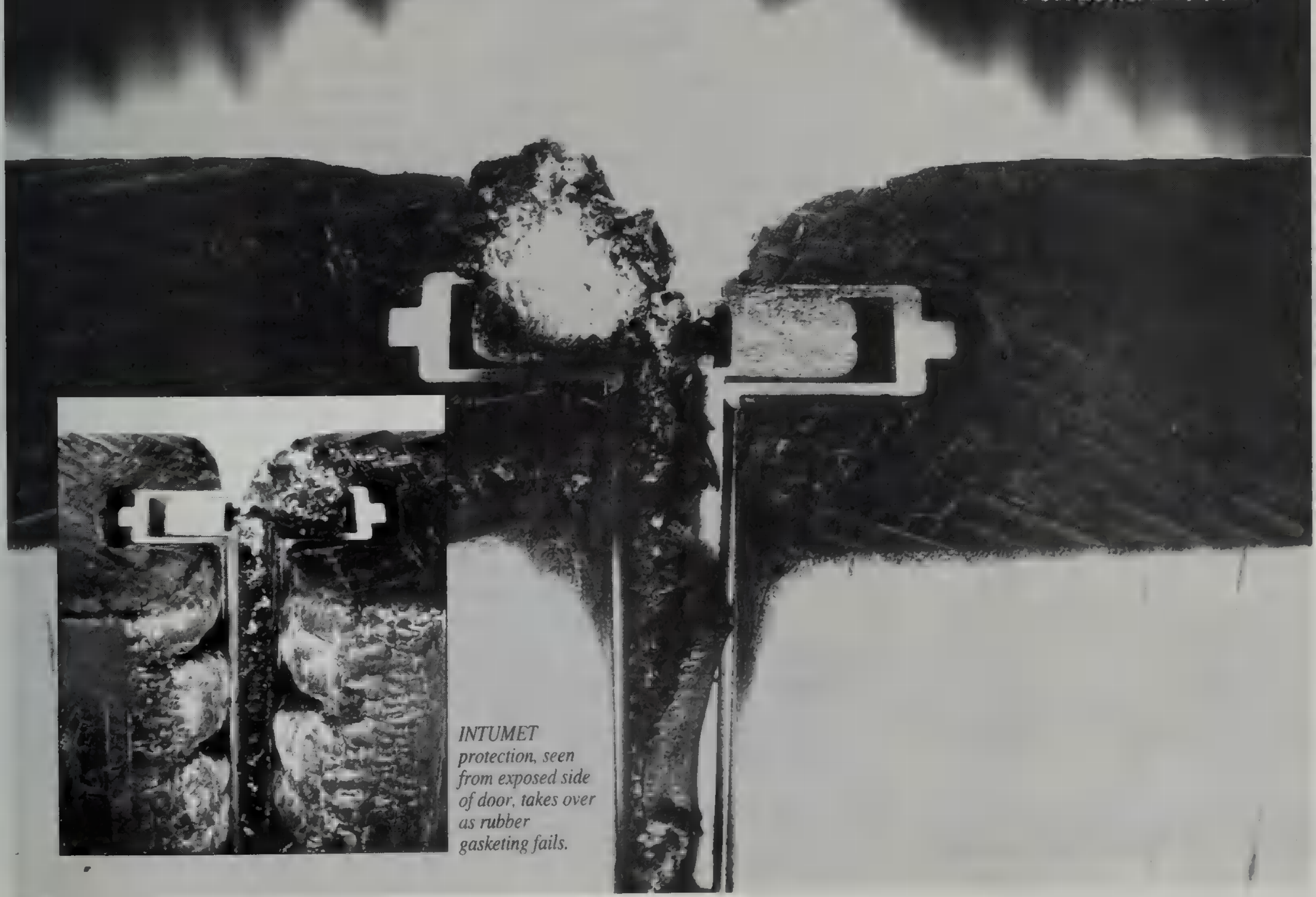

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125 Beardshear Hall
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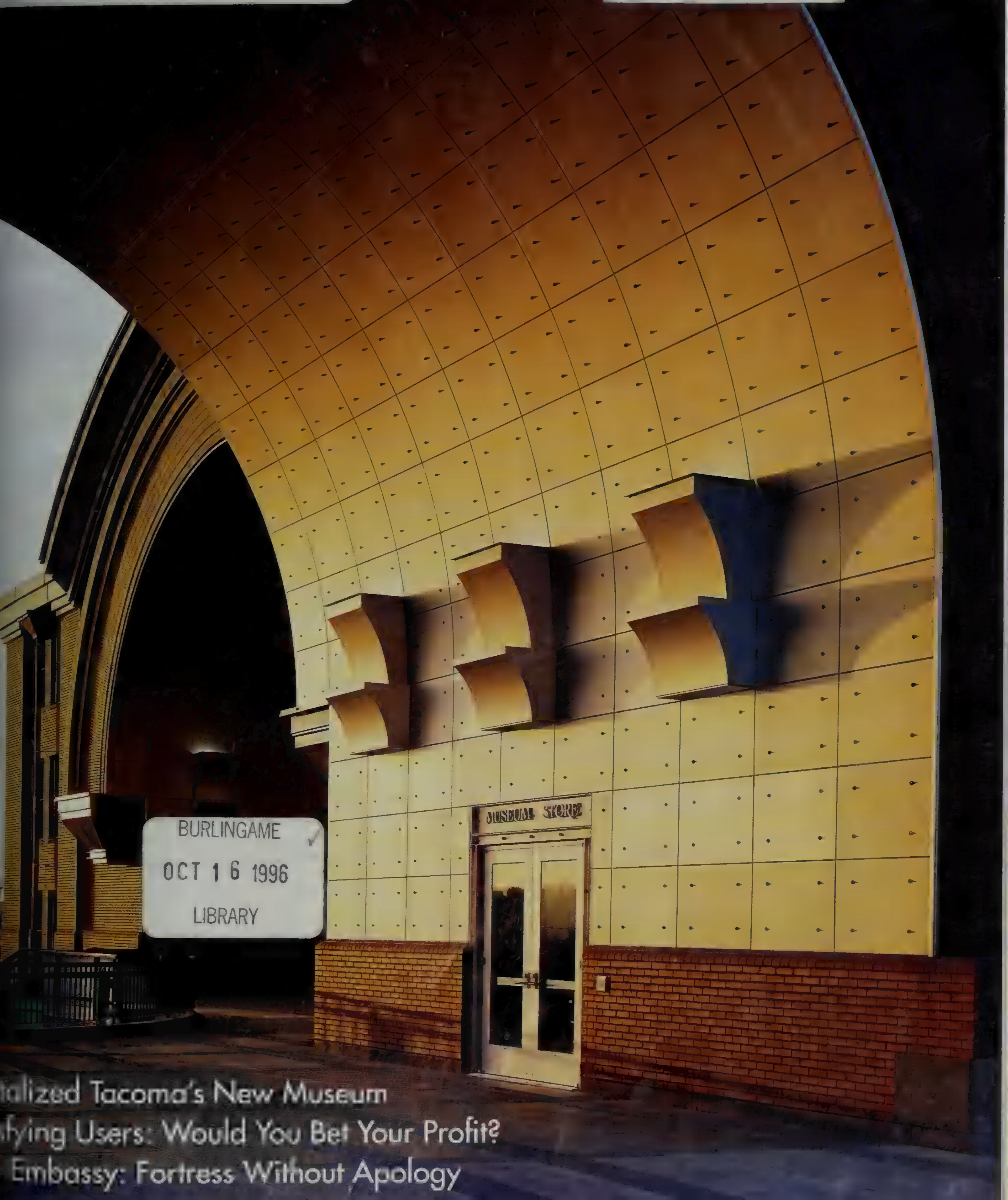

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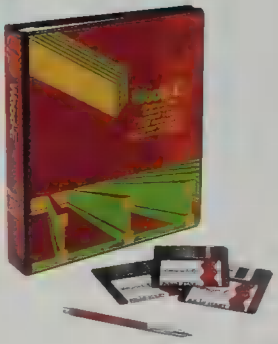

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The formidable new U.S. Embassy in Lima, Peru.

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A collaboration between a famous firm in Texas and local architects, the museum is helping revitalize downtown Tacoma.
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For all those who hav
"Can AutoCAD Release 13 really mak

1. New expanded multiline text object has automatic word wrap and flexible text alignment.
2. Easy to change the style attributes of individual text characters such as color, height, obliquing angle.
3. New text style dialog (DDSTYLE) gives more access to create, edit, and set text styles.
4. Easier to underline and overscore text.
5. Easier to edit text with integrated, dialog-based text editor.
6. Cut, copy and paste in the MTEXT editor.
7. Object grips can be used to modify the width of paragraphs.
8. AutoCAD text now supports True-Type and PostScript® Type 1 fonts.
9. Spell Checker includes standard and custom dictionaries.
10. Easily import a TXT file.
11. Create stacked fractions for better readability.
12. Single-line MTEXT editor for DOS users.
13. Map slower fonts to faster ones (FONTMAP).
14. Fill in text fonts (TEXTFILL).
15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT).
16. Move, rotate, erase, copy, mirror, stretch, or scale each text object
17. Automatically stack fractions in dimensions.
18. Inferred linear dimensioning automatically distinguishes between horizontal and vertical [illegible] ns and repositions text
19. [illegible] ting dimension [illegible]
20. [illegible] families [illegible]
21. [illegible]
22. You can suppress the first or second dimension line.
23. Baseline and Continue dimensioning have been streamlined.
24. Baseline and Continue dimensioning work on angular dimensions.
25. DDIM dialog box allows preview prior to input and improves access to properties.
26. Dimensioning better follows industry and international standards, including ANSI, ISO, and JIS.
27. Dimension styles are more flexible and easier to create.
28. Override feature allows you to change properties on a per-dimension basis.
29. Geometric tolerancing creates and edits tolerance control frames automatically.
30. Easier to modify dimensions.
31. Dimensioning has its own units settings.
32. Create splined leader lines.
33. Create multiple lines of text in leaders.
34. Automatic island detection finds a complete boundary with one pick.
35. Associative hatching automatically updates hatch to modified boundaries.
36. The restructured BHatch dialog box is simpler and faster to use.
37. Drive the BHATCH command from the command prompt if desired to run scripts.
38. Create a hatch boundary manually on the fly.
39. Easily edit hatch properties without redrafting the hatch.
40. New ISO compliant hatch patterns included.
41. Load linetypes from within the Layer dialog box.
42. Visual representation [illegible] linetypes for selection [illegible] tore loading.
43. The ability to create and use custom linetypes with text and shapes.
44. Assign linetype scale factors per object (versus per drawing).
45. ISO Compliance of linetypes.
46. DDMODIFY has been dramatically improved.
47. Direct Distance Entry eliminates laborious coordinate keyboard entry; allows you to move the mouse in desired direction and enter a single distance value.
48. Object snap now snaps to extended intersections.
49. Running object snap dialog box is now transparent.
50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.
51. New FROM object snap can reference a point from within a command.
52. Object Cycling insures that you select the correct object every time.
53. Improved Fillet command can be used to cap parallel lines.
54. Fillet between a line and a polyline.
55. Fillet without trimming the existing geometry.
56. Fillet that doesn't cancel when you miss the object.
57. Chamfer by length and angle.
58. Chamfer without trimming the existing geometry.
59. UCS restrictions are gone for fillet and chamfer commands.
60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).
61. Cutting edges don't need to be on the same UCS as the objects you're trimming.
62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).
63. Boundary edges don't need to physically cross the objects you wish to Extend.
64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.
65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.
66. New overlay option in the Xref command avoids circular references.
67. The Xref command now searches the AutoCAD path to find referenced drawings.
68. Purge your drawing at any time.
69. Easy to create construction lines that extend infinitely in both directions (XLINE).
70. Easy to create construction lines that extend infinitely in one direction (RAY).
71. Group objects together by name with object grouping (GROUP).
72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).
73. Intersection clean-up for multiple parallel lines simplifies wall creation.
74. Save multiple MLINE styles for quick access.
75. Fill in parallel lines with a different color (MLINE).
76. True geometric Ellipses.
77. Snap to the center or quadrants of an ellipse.
78. Create elliptical arcs.
79. Create NURB splines.
80. Specific editing commands for greater control of new splines.
81. Explode blocks with varying X and Y scale factors.
82. Solid modeling included in base AutoCAD.
83. Create ACIS solids with solid primitives.
84. Perform Boolean operations on solids and regions (union, intersect, subtract).
85. Solid profiling comma allow you to convert 3D to (SOLPROF/SOLDRAW/SOL
86. Create regions.
87. Extrude along a path
88. Determine mass prope of a model.
89. Fillet and chamfer s
90. Faster solid model processor and smaller mod sizes than AME.®
91. Control the displa tessellation lines (isolines).
92. Import and export ACIS
93. Translate AME models R13 solids.
94. Rendering is faster and
95. New colored spotli
96. Phong shading supp highlights from colored li source.
97. Material Library and included.
98. Assign materials for sh by layer.
99. Import and export 3
100. Render to file with only; supports over a do new file formats.
101. Windows standard
102. Standard Toolbar co icons for high-usage dra management and drawi editor navigation functio
103. Easy to create and custom toolbars.
104. Toolbars can float be docked.
105. Object Properties T offers quick access to la color and linetype functio
106. Easy to understand with tool tips.
107. Drag and drop too editing.
108. Preview drawings opening to speed up identification and avoid op the wrong file.
109. See a visual repres tion of WBLOCKS before insert them.

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134. On-line What's New shows overview of new features in Release 13.
135. Cue Cards walk you through basic CAD operations.
136. CD-ROM installation is faster, easier.
137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95
138. Typical, Custom or Minimum install options.
139. Configuration files are now portable and ASCII.
140. No more ACAD.PWD file.
141. The ability to turn off the automatic Backup files.
142. Improved control over memory management.
143. OLE 2.0 with drag and drop allows you to dynamically embed spreadsheets, video clips, Word documents into

154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
156. Real-time Pan.
157. Real-time Zoom.
158. Incremental saving of the drawing file.
159. Faster regens due to more drawing data stored in memory during working session.
160. No regen on Window resize.
161. Optimized output on selected Windows system printer drivers.
162. Improved HP GL/2 plotting performance on Windows and DOS platforms.

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144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
145. Read drawing files created in previous AutoCAD releases.
146. Save as a Release 12 drawing file.
147. ARX(object-oriented development platform) allows for tighter integration with 3rd party software.
148. Broad peripheral support.
149. Undo support for external database links and operations.
150. Output to STL format.
151. Xref and Block support for non-graphic links.
152. ASI access to ASE link mechanism.
153. ASILISP contains new LISP functions for accessing external databases.

163. ADS applications run faster.
164. AutoLISP programs run faster.
165. Pager included for large drawing memory management.
166. Multiple sessions of AutoCAD.
167. Windows 95 user interface.
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169. Supports Universal Naming Convention (UNC) for Files and External References.*
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174. Windows NT on Alpha Systems.
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176. Ability to generate .DWF files and make your drawings available over the Internet.

Release 13 also supports AutoCAD Runtime Extension (ARX) applications from developers like KETIV Technologies, Inc., ARCHIBUS, Inc., and Softdesk, Inc. These next generation tools use the object-oriented database in R13 to provide you with a seamless and associative design environment. Plus, R13 has Internet support, so now you can view, send, and share design content over the Internet.

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Letters

Poundbury protests

The May (1996) issue of ARCHITECTURAL RECORD contains a one-page-long review of Leon Krier's Poundbury (page 15) so unrelentingly detrimental to its reputation that one could only hope that the correspondent was merely innocent of matters urban, rather than simply slanderous. I undertook a correction which resulted in a text, also one page long—the correction of misinformation taking no less effort than its willful promulgation.

To the submittal of this letter, I received the following reply "Regretfully, we will not be able to publish Andres Duany's letter in ARCHITECTURAL RECORD, since it would occupy at least a full printed page." The need of the precious page for other purposes being self-evident, I desist from my attempts and direct those interested to access this useful text through the Web at http//:www.dpz_architects.com
Andres M. Duany
Andres Duany and Elizabeth Plater-Zyberk, Architects, Inc.
Miami, Florida

The Poundbury article in the May issue makes no comment on financial success or sales acceptance, nor any indication if the residents like it or not. (Why would anyone buy or wish to live in a house where the kitchen and bath are "add-ons" as appears desirable to your editor?)

Your editorial policy seems to be a series of pompous tirades against those who "step on your [illegible] HRH may be doing a good [illegible] a bad job, who knows. There is no way to tell from this [illegible].
[illegible] II
[illegible] Real Estate
[illegible] North Carolina

'Sinister' museum?

I enjoyed Cheryl Kent's review of Joseph Kleihues' new museum in Chicago [ARCHITECTURAL RECORD, August 1996, pages 80-87]. Especially, I share her concern for a grand Chicago building tradition now in apparent decline. And, bravo for taking a stand for simplicity and restraint!

But I am not certain the new museum reinvigorates tradition. There is something peculiarly sinister about that building. Axial and monumental it is, but it lacks the amiable grace and strength of the best Chicago work. Mies's buildings are composed of ineffably proportioned rectangles; Kleihues, on the other hand, has resorted to the use of the square to organize his facades, a somewhat tyrannical cliché used in the most prosaic contemporary designs.

Also, street-level entries are not necessarily the purview of modern museums. Both the Uffizi and Pitti museums, although designed for other uses, have worked just fine for many years as repositories of fine art. Grand stairways are, perhaps, an anachronism of a false monumentality in an age where each public building is now required to be accessible.
James A. Gresham, FAIA
Gresham & Beach Architects Inc.
Tucson, Arizona

Academia revisited

The July issue on Academic Buildings [RECORD, July 1996] is more a look backward than forward. Why does a retro-garde project like the Colgate Darden Graduate School of Business Administration at the University of Virginia (pages 72-79) have eight full pages devoted to it

Continued on page 120

Calendar

October 16-February 2
"Viewing Olmsted" exhibition of 155 photographs of the work of North America's most important landscape architect. Canadian Center for Architecture, Montreal. Call 514/939-7000, fax 514/939-7020 to request further information.

October 19-21
The American Society of Landscape Artists annual meeting and exposition; Los Angeles Convention Center. Details available by phone, 202/686-2752, or fax 202/686-1001.

October 23
The Society of American Registered Architects (SARA) convention will be held in Atlanta at the Swissotel. Call 770/454-9019 for more information.

October 26
ARCHITECTURAL RECORD and the Cooper-Hewitt National Design Museum will hold a symposium on "Creating the Modern House: Forty Years of RECORD HOUSES" in the auditorium of the McGraw-Hill Building, 1221 Avenue of the Americas, New York, N.Y.

Panel discussions include:
- Lifestyles and residential design
- Design ideas that started with RECORD HOUSES
- Client-architect relations
- Houses of the future.

Participants include Charles Gwathmey, Will Bruder, Ulrich Franzen, Jack Travis, Gisue Hariri, Leslie Gill, John Johansen, Robert Campbell, Suzanne Stephens, Thomas Hine, and Charles Gandee.

There is a $75 fee for RECORD subscribers and Cooper-Hewitt members; $35 for students; $100 for all others. To register, call the Cooper-Hewitt at 212/860-6321.

Continued on page 29

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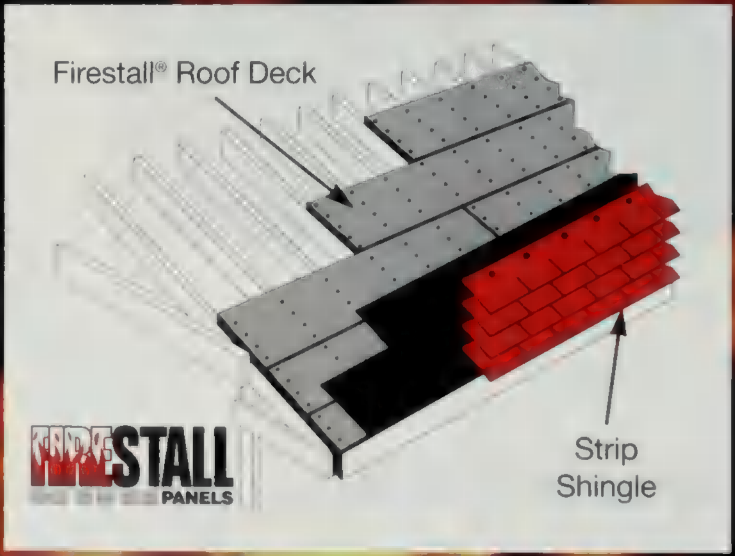

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Boston

AIA Holds Third Diversity Meeting

Minority architects attending the third annual AIA Diversity Conference were challenged to combine expertise with activism, in an impassioned keynote speech by educator Leslie Kanes Weisman.

"The efficacy of the profession in coming decades will depend upon knowledge of public policy, global markets, sustainable design, universal design, information technologies, and diverse cultures," Weisman, author of *Discrimination by Design*, told the more than 125 architectural practitioners and educators from 27 states at the August conference in Boston.

Architect Marc Maxwell, local chair of the event, urged attendees "to raise expectations of what we expect from the AIA." Many of the other speakers concurred with Maxwell, emphasizing that minority groups should not only be accepted by, but influential within, the AIA.

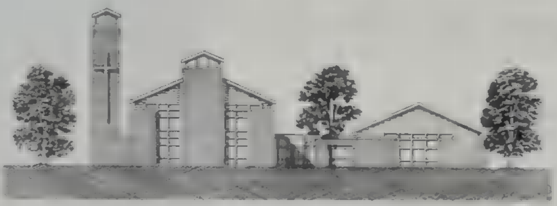
Washington, D.C., architect Raj Barr-Kumar, who next year will become the AIA's first non-white president, pledged support to broaden the diversity agenda and urged the audience to take a more active role in AIA affairs. "Minority culture members must do more than merely show up at the AIA; they must take action as leaders."

The three-day conference included seminars on affirmative action, the difficulties for gays and lesbians of coming out professionally, the marketing potential of staff diversity, and the need for affordable housing and urban-design strategies that address diverse constituencies and changing demographics.

To obtain the conference proceedings, including specific recommendations for action, call AIA in November at 202/626-7482. Next year's conference will take place August 22-24 in Seattle. *Nancy Levinson*

Texas

100 Architects and 12 Students Help Out After Church Burnings in South



Elevation of the Church of The Living God

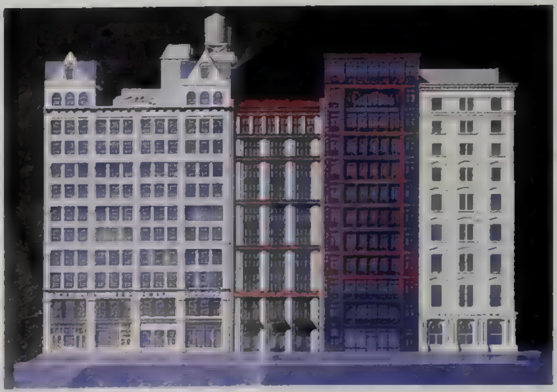
In the wake of rampant church burnings throughout the South, architects have been volunteering their time and labor. After two predominantly African-American churches in Greenville, Tex., were severely damaged on consecutive nights, 100 members of the Dallas AIA Chapter and 12 students from the University of Texas at Arlington donated their services to help rebuild the 7,000-sq-ft New Light House of Prayer and the 5,500-sq-ft Church of the Living God. Construction of both churches will be executed by the Texas Baptist Men, volunteers who build churches around the country. Dennis Stacy, president of the Dallas AIA Chapter and chair of the New Light House of Prayer design team, said the volunteers are pushing to get both churches built in time for Christmas. "We are trying to show that these crimes will not be tolerated or accepted," said Stacy. The AIA's new Regional Disaster Assistance team is seeking architects who can provide qualified guidance for renovation and reconstruction projects. The AIA is currently working with the National Council of Churches of Christ, U.S.A., and HUD to distribute technical support and a list of "architects-on-call."

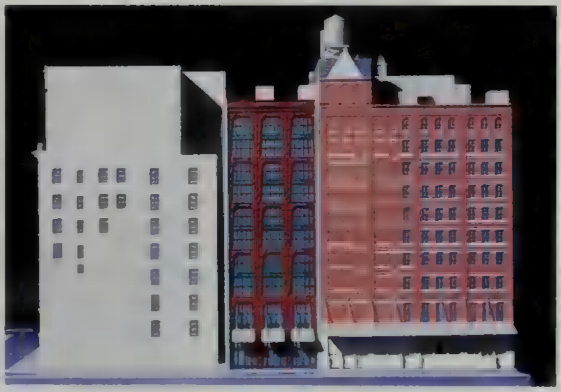
"Architects have shown a huge outpouring of goodwill," said Elizabeth G. Miller, the Council of Church's director of construction and re-building services. For more information, contact Jonathan Moore at AIA, 202/626-7375. *Katherine Kai-sun Chia*

New York City

Work to Start on New Rossi Building

Scholastic Inc., a leading publisher of educational materials, will begin construction in December of a 115,800-sq-ft, 10-story office building adjacent to their current headquarters on Broadway in New York City's SoHo district. Designed by Aldo Rossi, in collaboration with Gensler Associates, the building, slated for completion in 1998, incorporates materials inspired by SoHo's turn-of-the-century Cast Iron Historic District: patinated steel, buff-colored stone, terra cotta, painted metal, and glass. Since the building extends through the block, the Broadway facade (bottom left) will reflect the Classically formal architecture of neighboring buildings while the opposite Mercer Street facade (bottom right) will echo SoHo's industrial heritage. ■ *(News continues)*





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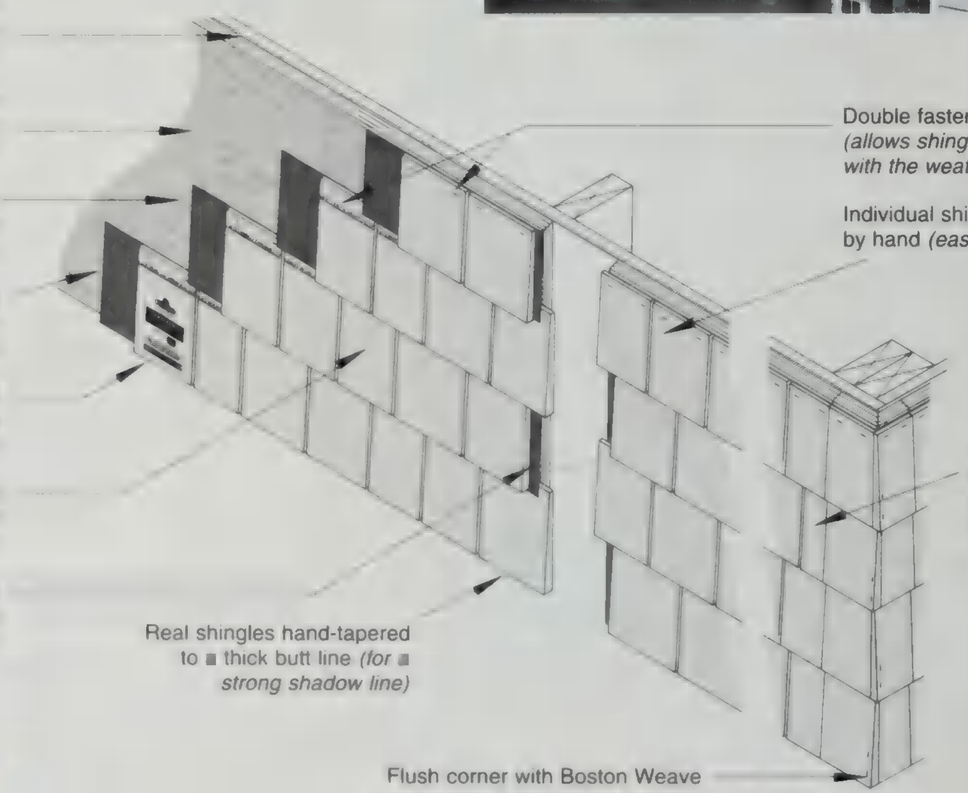
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Boston

HUD Pushes "New Urbanist" Principles for Inner-Cities

Housing and Urban Development Secretary Henry G. Cisneros has recommended that public-housing officials from around the country start applying "new urbanist" principles to the redesign of troubled inner-city housing projects. New urbanist architects use ideas extracted from traditional town plans to design new communities that are pedestrian-oriented and organized around mixed-use neighborhoods.

While new urbanist developments such as Seaside, Fla., and the Kentlands outside of Washington, D.C., have attracted attention during the past 10 years, the new urbanists have also been criticized for working mostly in suburbia and on "greenfield" sites beyond metropolitan centers. The new HUD endorsement should give new urbanist planners the chance to bring their ideas downtown to tough public-housing projects.

The first such opportunities will come from Hope VI, a HUD program created in 1993 to find innovative means of transforming the nation's most severely distressed housing projects. Two billion dollars has been appropriated for the program so far and $1.5 billion has been awarded to 38 public-housing authorities.

"Hope VI is the end of public housing as we know it," stated Christopher Hornig, HUD's deputy assistant secretary for public-housing investments, at a two-day seminar in August in Cambridge, Mass. The seminar was sponsored by HUD, the Congress for the New Urbanism, and the Housing Research Foundation. The Hope VI program encourages local authorities to work with private developers to create mixed-income, mixed-use communities, explained Marc Weiss, special assistant to Cisneros. *Clifford A. Pearson*

California

Swiss Firm Designs Dominus Winery

One of California's most distinguished wineries will soon be housed in a structure that is an elegant version of a road-cut. Adapting the strategies of highway engineering to the world of grand crus, the Swiss firm of Herzog & de Meuron has designed a 300-ft-long green container for Dominus Winery that will be completed for the harvest in 1998.

The project brings together the makers of Petrus, one of the grandest wines of France, with the mavericks of muted materials who are currently designing the massive Tate Powerhouse project in London. It is the first American venture for both.

The building will be a box-within-a-box: the outer skin is a scaffolding of "gabions," the metal webs that restrain rocks next to highways, and will contain loosely piled local rocks. *Aaron Betsky*

Michigan

Four New Projects at Cranbrook Follow In the Footsteps of Eliel Saarinen

Addition to Brookside Lower School

Cranbrook is reviving its building tradition with four new projects that complement the Eliel Saarinen/Henry Booth legacy.

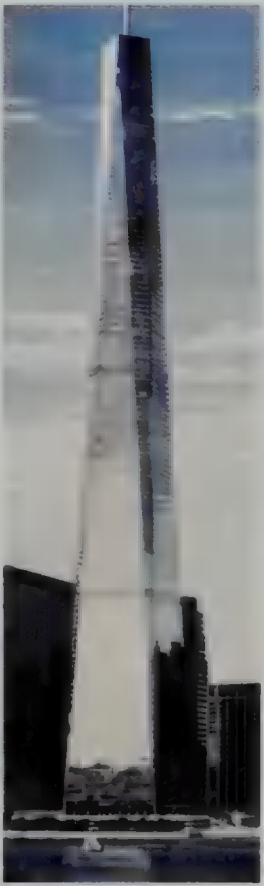
The $8.1-million, 20,410-sq-ft addition to Booth's Brookside Lower School, designed by Canadian architect Peter Rose, is near completion. The new wing includes music studios, science laboratories, and an early childhood center all joined by a window-lined walkway. "The architect chosen had to sustain [Brookside's] homelike quality which, architecturally, makes it a nurturing environment for children," said a Cranbrook spokesperson.

Groundbreaking for the New Institute designed by Steven Holl took place on September 7. The $27-million project includes renovations to the original Cranbrook Institute of Science designed by Saarinen and a new adjoining 27,000-sq-ft U-shaped wing to be completed in 1998. Visitors will enter the New Institute through the Light Laboratory, a glass tower fitted with prisms and lenses to create a constantly changing display of light and color by refracting artificial and natural light.

Architect Dan Hoffman, head of the Cranbrook Architecture Office, will design the majority of the science exhibits in the old and new wings with a team of architects, scientists, and industrial designers. Other projects waiting in the wings include new studios for the Academy of Art, designed by Rafael Moneo, and the new Athletic Complex and Natatorium, designed by Tod Williams and Billie Tsien. ■

New York City

Trump Tries To Be Tallest, Again



© AP/Wide World Photos

Donald Trump has whipped up yet another scheme for the world's tallest building—a 140-story skyscraper designed by Kohn Pedersen Fox for the New York Stock Exchange. Defeated a decade ago with a similar proposal in midtown, this project would be built at the foot of Wall Street on a concrete pier jutting into the East River. The plan also includes a Kennedy Center-esque trading-floor operation on an adjacent site. *Peter Slatin*
(News continues)

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News

Briefs

Foster to Build at Canary Wharf
Sir Norman Foster has been commissioned to design a $475-million, 500,000-sq-ft office building for Citibank at Canary Wharf in London. The location will serve as the front office for corporate banking in the United Kingdom and will be completed by the year 2000.

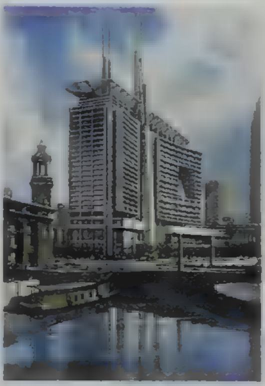
U. of Minnesota Chooses Architects
Antoine Predock of Albuquerque, N.M., and executive architect Short Elliott Hendrickson, Inc., of St. Paul, Minn., have been awarded the commission for the new $27.4-million, 230,000-sq-ft Gateway/Alumni Center at the University of Minnesota. The campus centerpiece will include a heritage gallery, meeting rooms, memorabilia shop, and offices. Construction will begin in spring 1997.

New Battery Park City Complex
Perkins Eastman Architects of New York City and Proteus, a Stamford, Conn.-based real-estate development firm, have been selected by the Battery Park City Authority to build a new $110-million, 488,000-sq-ft hotel and entertainment complex at Battery Park City in Manhattan. Groundbreaking is scheduled for November and completion by late summer 1998.

New VP at World Monuments Fund
Laurie Beckelman will leave her current position as the executive director of the Public Theater/New York Shakespeare Festival to become the vice president for external affairs at the World Monuments Fund. Prior to working with the theater, Beckelman was chairperson of the Landmarks Preservation Commission. ■

China

U.S. Firm Wins Shanghai Competition But May Lose The Commission



A U.S. architectural firm is learning the hard way that international design competitions in China may leave the winner empty handed.

Anshen + Allen, Architects of San Francisco with the East China Architectural Design & Research Institute finished first in the Shanghai Way To Fund International Finance Center competition for the two-tower, 1.23 million-sq-ft mixed-use complex located at the transition point between the historic Bund district and the developing area north of Suzhou Creek. As the winner, A+A should have been awarded the design commission. However, the original client group, a joint venture of Chinese insurance companies, was recently restructured and the reconfigured group now intends to bring in another architect, coincidentally the second-place finisher.

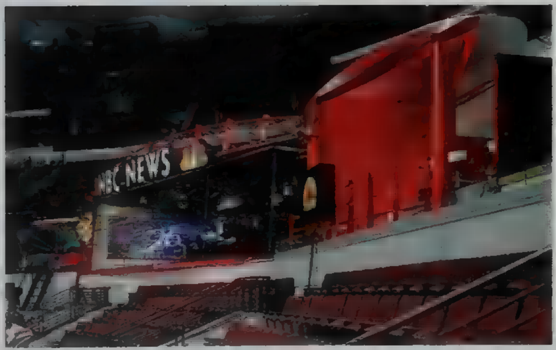
A+A has protested and is currently working with the Chinese government's Tendering Office and the Department of Construction to strengthen Chinese rules so that the competitions do not lose international credibility.

A+A's design beat out submissions from Fox & Fowle Architects of New York City, John Seifert Architects of the United Kingdom, B+H Architects of Canada, and Won Ouyang Architects of Hong Kong.

The $133-million center will include a 20-story office tower, a 25-story live/work tower with retail space, public plazas, an open five-story Great Hall, and the Floating Pagoda Hall that contains bridges at every fifth level to connect the live/work and office components. *Katherine Kai-sun Chia*

Chicago

T.V. Studio Is "Craned" Into Place



©Barbara Karant

With only one month to construct, how do you turn five United Center sports arena skyboxes into a temporary television studio for the Democratic National Convention, without damaging the existing space? Chicago architect Valerio Dewalt Train, Associates designed a 50-ft-long steel truss assembly for NBC and craned the entire studio into place, causing an uproar among other networks with their generic perches. ■

Washington, D.C.

WWII Memorial Competition Is Down to Six Finalists

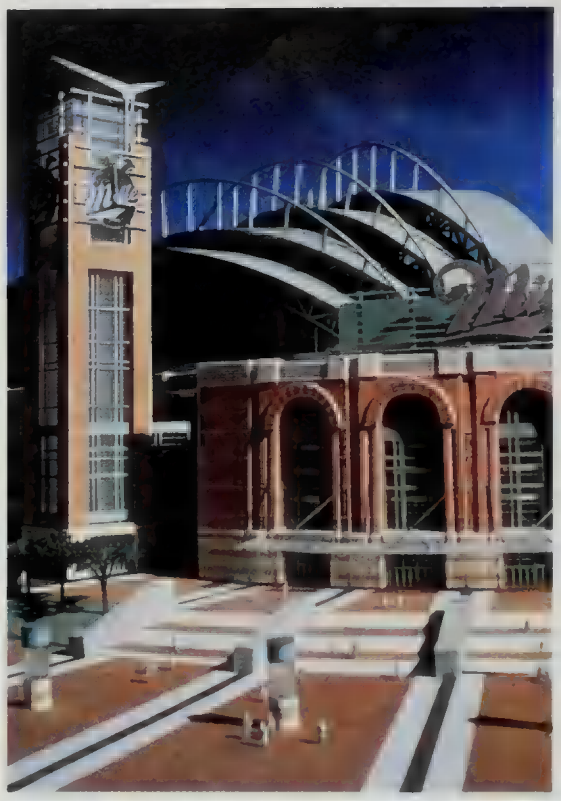
The American Battle Monuments Commission (ABMC) has announced six finalists from a field of 400 entrants who will participate in the next round of the World War II Memorial Competition.

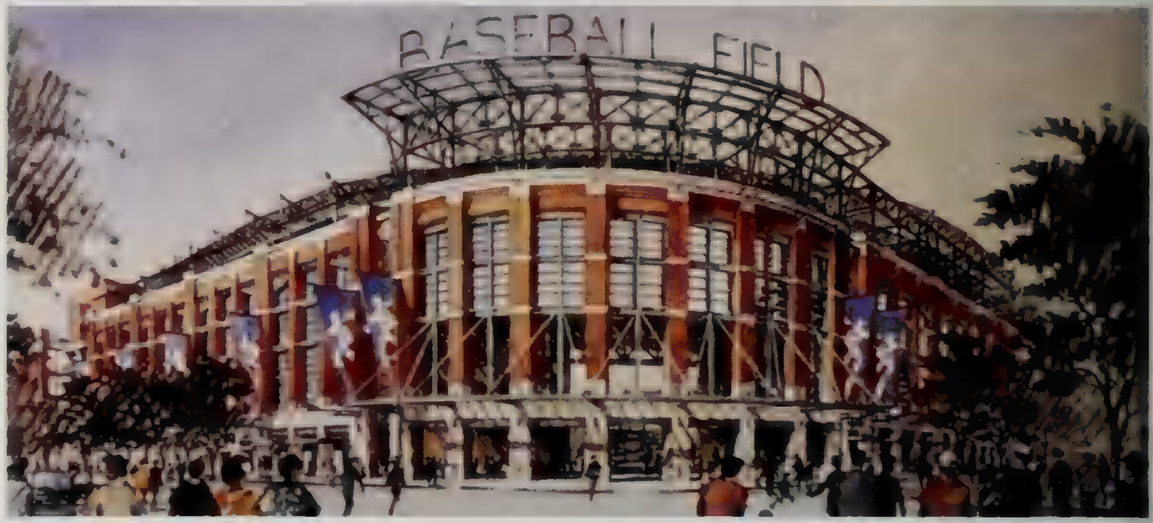
The 12-member evaluation board, made up of design professionals and World War II veterans, selected Brian Ambroziak, a graduate student at Princeton University School of Architecture; Friedrich St. Florian, architect and former dean of the Rhode Island School of Design; Diana Balmori, landscape architect, Balmori Associates, Inc, New Haven, Conn.; Bernard J. Wulff and William C. Jackson, RTKL Associates, Inc., Washington, D.C.; Rafael Vinoly, FAIA, Rafael Vinoly Architects, PC, New York City; and Marion Weiss and Michael Manfredi, Weiss/Manfredi Architects, New York City.

The finalists each receive $75,000 to develop their preliminary visions into definitive designs that will fulfill the objectives of the ABMC, as directed by Congress in May 1993, to create a special place of great honor on the Mall in Washington, D.C., and "to commemorate the lasting significance of World War II on America and the world." ■

Seattle and Milwaukee

Two Teams Will Get Convertible Ballparks from NBBJ





NBBJ Sports and Entertainment of Seattle has a pair of baseball stadiums under way. The Pacific Northwest Baseball Park (above), for the Seattle Mariners, will feature a retractable roof and a natural grass playing field. Close-in angle seating will get fans right up to the action. NBBJ teamed with HKS of Dallas and Eppstein Uhen of Milwaukee to design Miller Park (left), the future home of the Milwaukee Brewers. This park will also feature a convertible roof, though the overall design takes its stylistic cues from turn-of-the-century parks. Miller Park is scheduled to open in the spring of 2000. ■

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Washington, D.C.

Former Rockefeller Center Management VP Is Top Pick for Architect of the Capitol

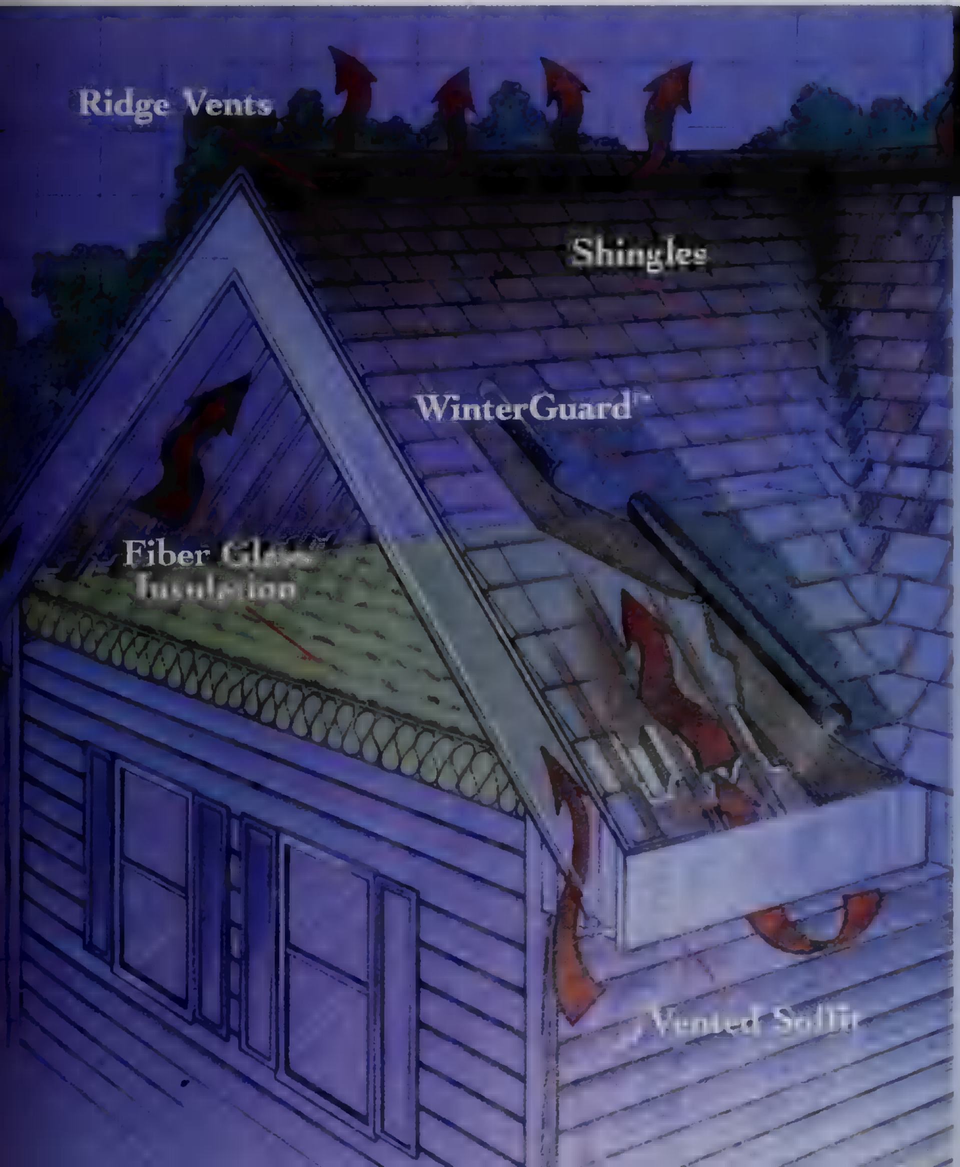
Alan Hantman (left), has diverse experience, ranging from the renovation of Rockefeller Center's Rainbow Room to assistant chief architect for a Saudi Arabia desalination plant.

A special Congressional panel has named Alan M. Hantman, a former Rockefeller Center Management Corp. vice president, its top choice to be the next Architect of the Capitol. Alternate selections are architect John Burgee, of John Burgee Architects, Millerton, New York, and William L. Ensign, the acting Architect of the Capitol.

The recommendations were forwarded to President Bill Clinton Sept. 18; however, the President isn't obligated to nominate any of the three. But the recommendation by the bipartisan, 14-member Architect of the Capitol Selection Commission carries weight. An aide to Senate Rules Committee Chairman John Warner (R-Va.) says he hasn't seen indications that Clinton would name someone who isn't on the list. Clinton's nominee then must clear the Rules Committee and the full Senate. The Warner staffer says a confirmation hearing won't take place before Congress adjourns. In the meantime, Ensign will continue as acting Architect. The former Architect of the Capitol, George M. White, retired in November 1995 after 24 years.

Hantman, who turns 54 in October, is the Congressional commission's first choice "by a substantial margin," Warner wrote in a letter to Clinton. The Bronx, N.Y., native joined Rockefeller Center Management Corp. in May 1986. He rose to the post of vice president for facilities planning and architecture before becoming a consultant. One of the highlights of his tenure, according to Vince Silvestri, spokesman for the Rockefeller Group, was supervising the $25-million renovation of the Rainbow Room. Before coming to Rockefeller Center, Hantman was with Cushman & Wakefield's development consulting group, and had been assistant chief architect with Gibbs & Hill, where his largest project was a $2-billion desalination project in Saudi Arabia. Hantman most recently has been a consultant to Rockefeller Center Management Corp., and its new ownership group.

From 15 candidates, six were selected for personal interviews. Besides the three on the commission's list, the others were George Hartman, partner with Hartman-Cox Architects, Washington, D.C.; Kathryn Vernon-McKeen, Connecticut Department of Public Works director for program management; and Michael Bocchiocchio, assistant vice president with the University of California System. *Tom Ichniowski*



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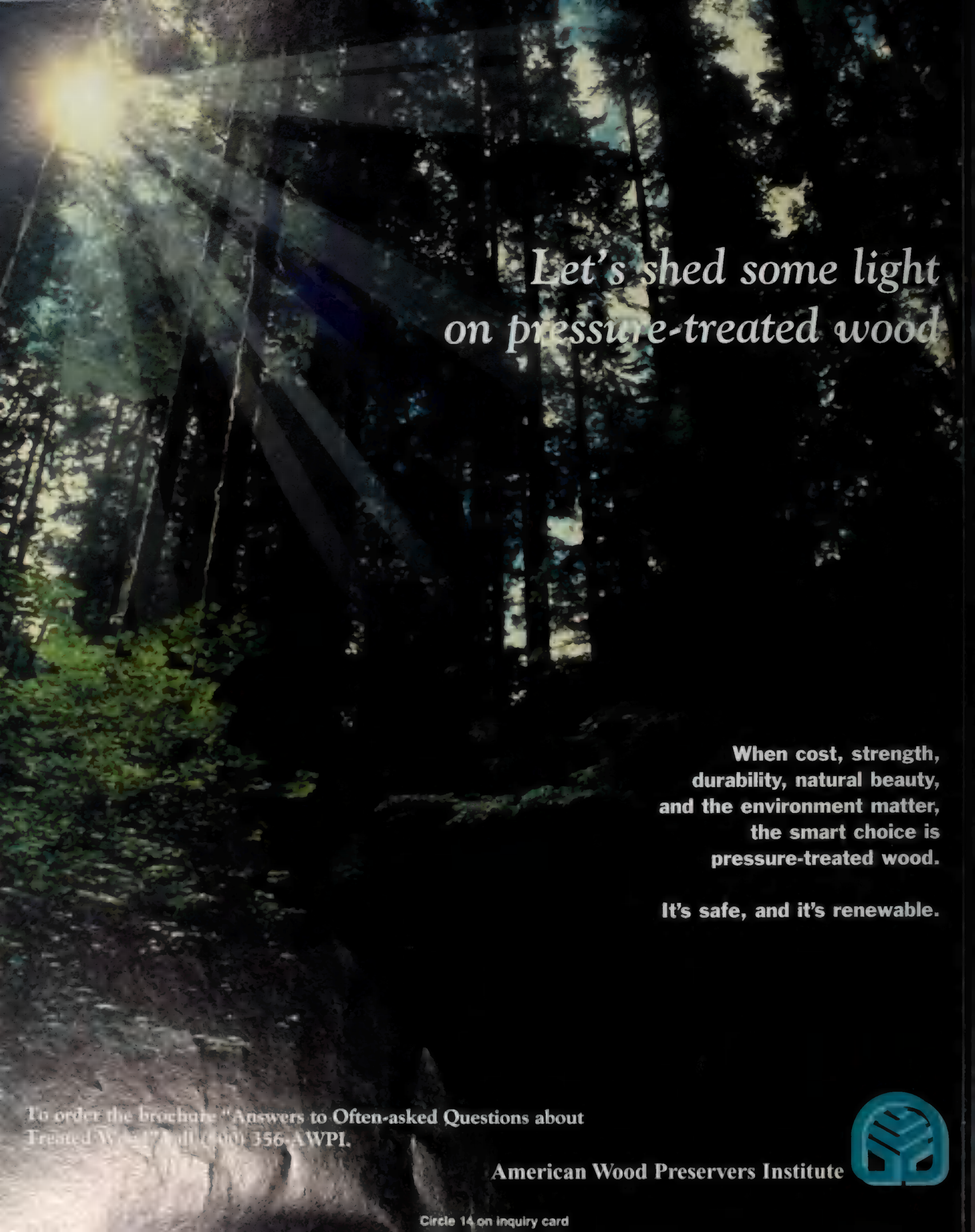

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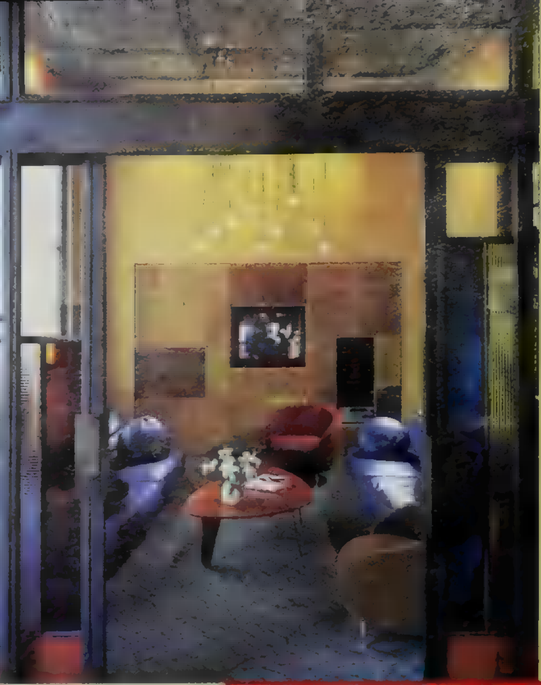

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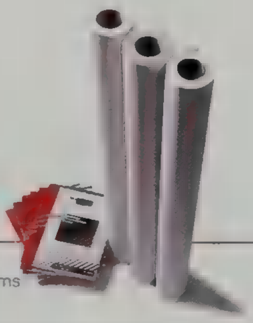

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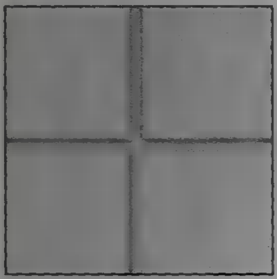

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Continued from page 8

Through October 27

"City of Ambition: Artists & New York, 1900-1960," an exhibition designed by London architects Nigel Coates and Andrew Onraët, includes New York City in oils and pastels by Georgia O'Keeffe; photographs by Berenice Abbott and Margaret Bourke-White; and films by D. W. Griffith. Whitney Museum of American Art, New York City, phone 212/570-3633; fax 212/570-1807.

October 28-31

Computers for Contractors '96 at A/E/C Systems Fall, Orange County Convention Center, Orlando, Fla. Call 800/451-1196; fax 610/458-7171 for details.

November 7-9

Interplan '96 will hold its show at the New York Coliseum, with seminars and an interior-design and planning exposition. The A&D building also plans to expand exhibitor space at its West 58th St. location. Call 800/950-1314, ext. 2611 for details.

November 13-15

"Architecture and Urbanism at the Turn of the Third Millenium" conference will be held at Sava Centar in Belgrade, Yugoslavia, presenting symposia on Society in Transition, Sustainable Development, Migrations, Architecture in Context, New Technologies, and Education. For details, fax Arkitonski Fakultet at 381-11-3224-122.

November 14-17

The Ninth Symposium on Healthcare Design will be held at the Boston Marriott Copley Place Hotel. For details, call 510/370-0345 or fax 510/228-4018.

November 15-February 23

"An American Embassy in Berlin" examines the recent architectural competition for the American Embassy in the German capital. Models and drawings by all semi-finalists as well as the winner, Moore Ruble Yudell and Gruen Associates, will be shown at the National Building Museum, Washington, D.C., 202/272-2448, fax 202/272-2564.

November 22-January 12

"The Architecture of Santiago Calatrava" moves into the Milwaukee Art Museum (MAM) with an exhibition that will include models, drawings, and photos of the Spanish-born architect and engineer's major works. Calatrava's first completed project in the U.S., scheduled to open in 2000, is an expansion of MAM. Call 414/224-3240 for exhibit details.

Through December 8

"Breuer's Whitney," an exhibit in the lobby gallery of the Whitney Museum of American Art, New York City, takes a critical look at the design, reception, and continuing legacy of architect Marcel Breuer's 30-year-old building of "upside-down ziggurat of cantilevered 'setouts' and trapezoidal bay windows" on Madison Avenue that became an instant landmark. Included in the exhibition will be Michael Graves's proposed additions to the Whitney from the mid-80's; photographs of Robert Venturi's Bicentennial exhibition; and drawings of the projected conversion of the fifth floor into galleries. Call 212/570-3633 or fax 212/570-1807 for details.

Through December 15

The drawings of Louis Kahn are on exhibit at the Jewish Museum, New York City, and include architectural drawings and models surveying Kahn's synagogue projects. Call 212/423-3271; fax 212/423-3232 for details.

Competitions

◆ Submissions for the 1996 Wood Design Award Competition, sponsored by the American Wood Council, are due Oct. 11. Projects submitted must have been completed since January 1993, and have used wood as an integral construction material for structural and finish applications. For information and entry materials, call Ron Ingram at AWC, 202/463-2769, or fax him at 202/463-2791.

◆ International Making Cities Livable Conferences is calling for submission of papers and exhibit proposals by Oct. 15. The first IMCL conference will be March 8-12, 1997, in Charleston, S.C.; the second April 15-19 in Santa Fe, N.M. Call 408/626-9080 for details; fax 408/624-5126.

◆ GSA 1996 Design Awards entries are due Nov. 8 at noon. Eligible are designs of GSA-authorized projects, with construction completed or begun between Jan. 1, 1991 and July 1, 1996. Call Marilyn Farley at 202/501-1888 for details and entry form.

◆ Submissions to the biannual Rudy Bruner Award for Excellence in Urban Environment are due Dec. 13. First-prize winner receives $50,000; honorariums of $1,000 go to each of four additional finalists. Contact Bruner/Cott & Associates for an application or more information at 130 Prospect St., Cambridge, MA 02139; phone 617/492-8400; fax 617/876-4002.

◆ The Society of Architectural Historians is offering two fellowships that would allow winners to travel to the group's annual meeting next April in Baltimore; and two cash awards, one for research on Spanish, Portuguese, and Ibero-American architecture ($1,000), the other for work on an Historic American Building Survey ($7,500). Application forms are available from the Society, 1365 North Astor St., Chicago, Ill. 60610-2144; phone 312/573-1365. ■

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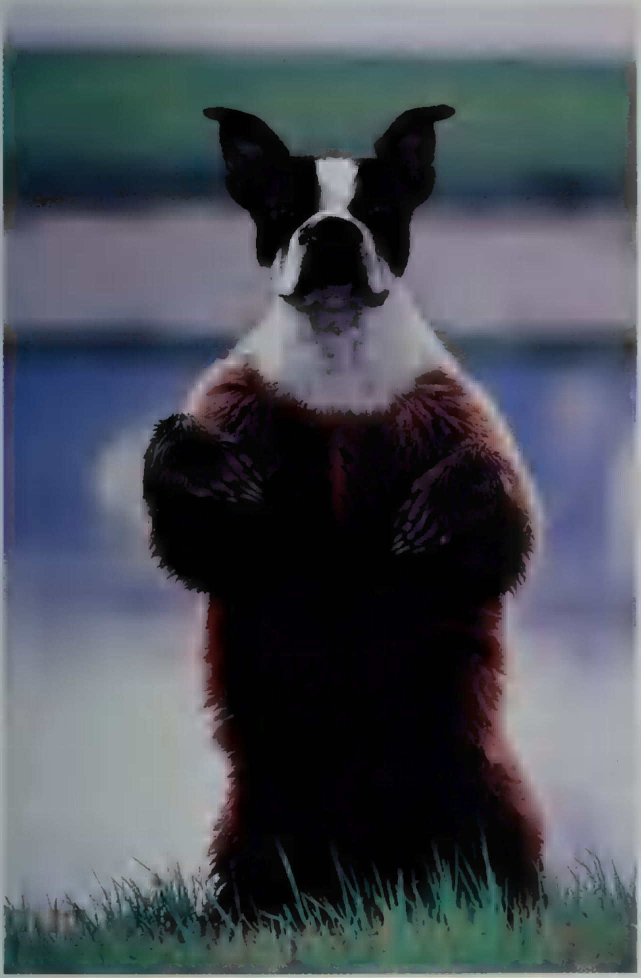
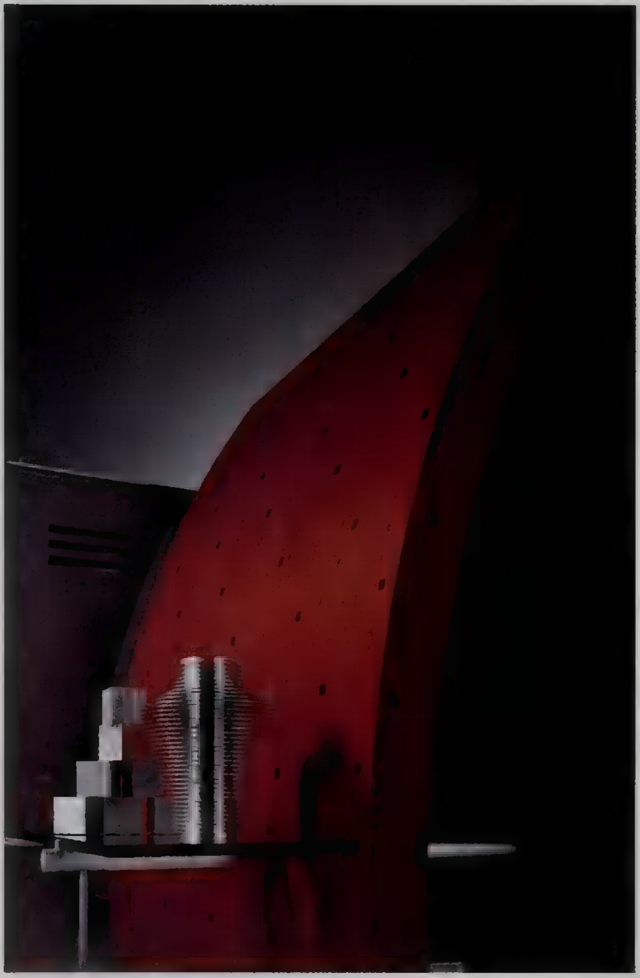


WARROAD, MINNESOTA. Half-bear/half-dog, this animal was spotted by an amateur photographer during an afternoon stroll. After mauling the photographer's companion, it insisted on playing 'fetch' for almost three hours.



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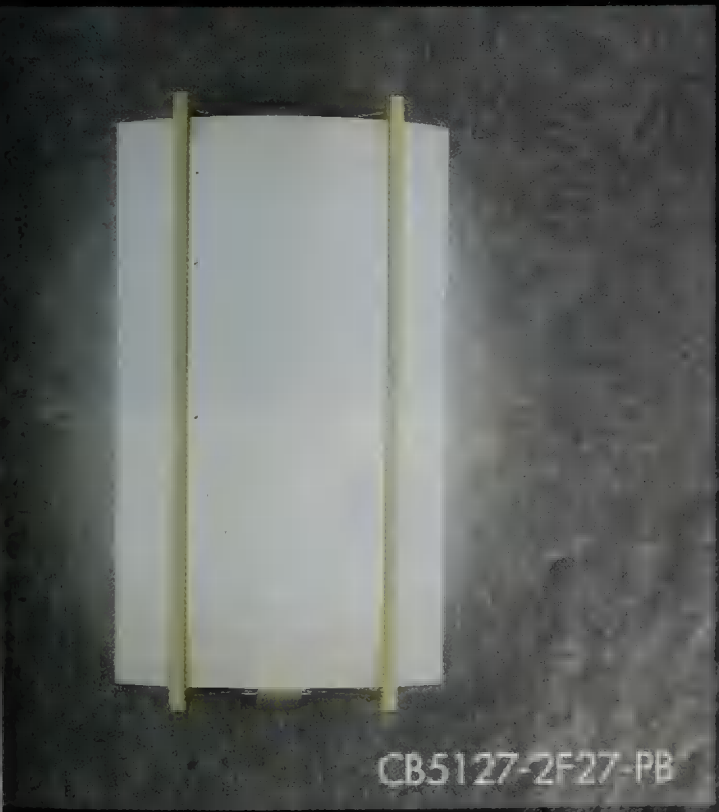

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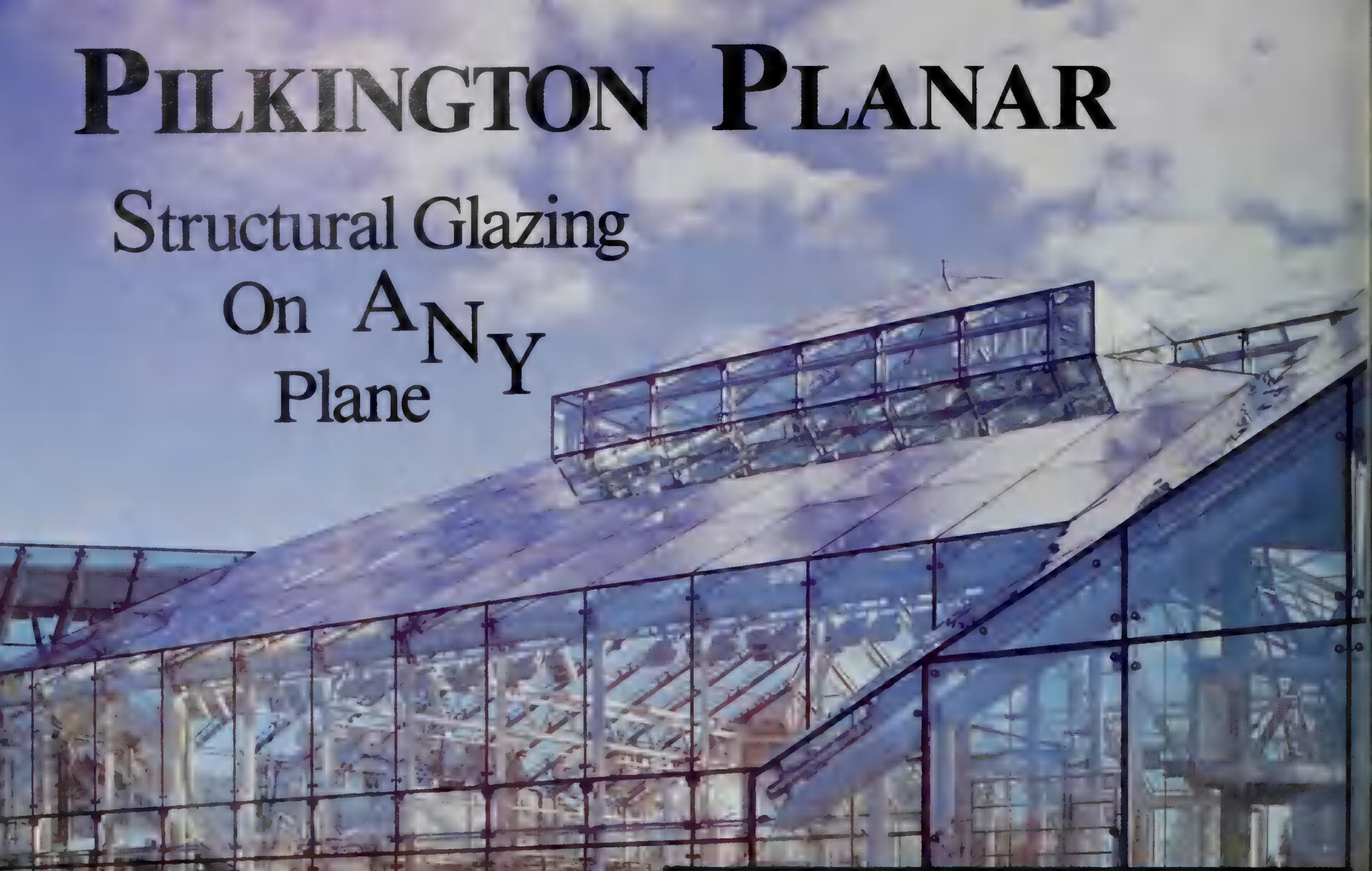

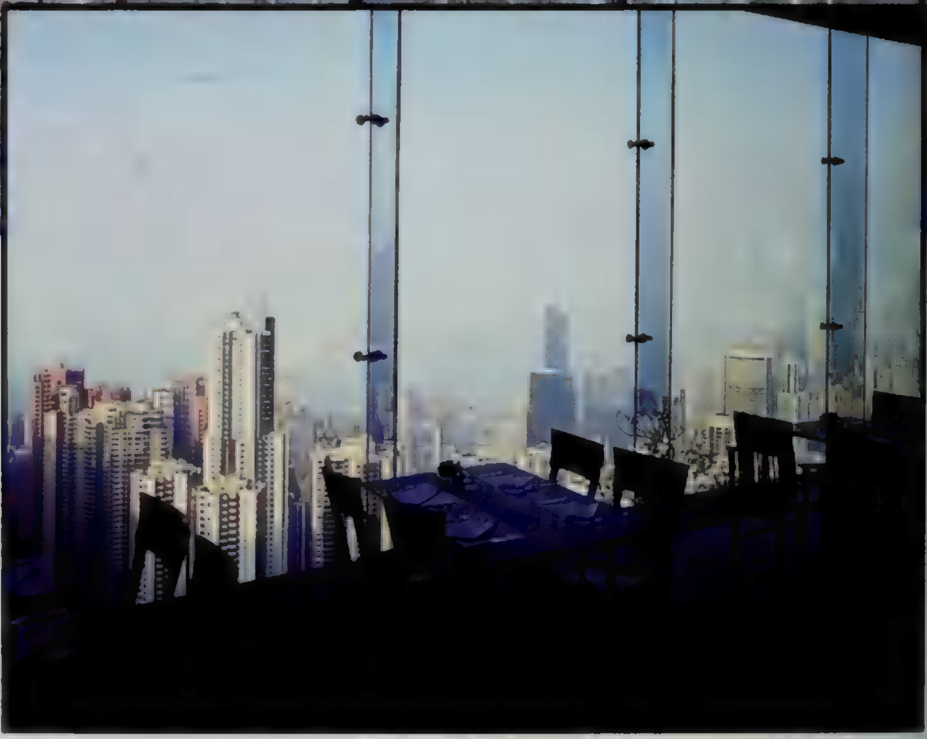

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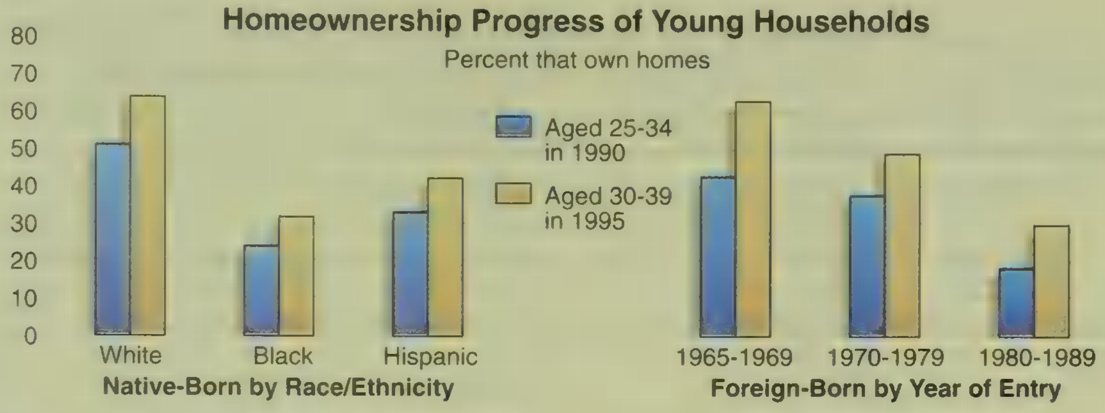
Indicators

Immigrants move up to homeownership

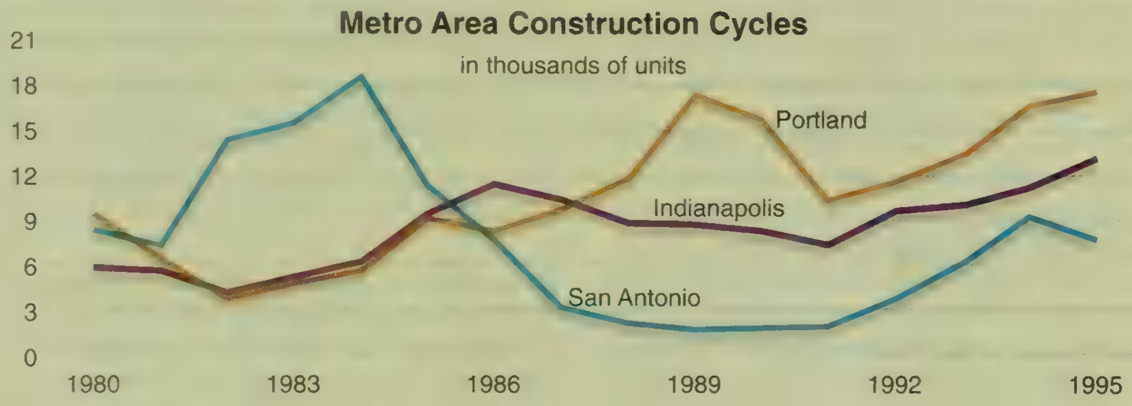
A study, "The State of the Nation's Housing," shows some surprising trends. Though much has been made of the stagnant earnings of those in their 20's, improvement in affordability means that a higher percentage of first-time buyers has been able to enter the market. Also, homeownership rates of immigrant groups that have been in the U.S. for a long time approaches that of native-born whites. Seventy-two percent of all whites own, while 42 percent of blacks and hispanics do. For study copies, call 617/496-7908. ■



Source: *Joint Center for Housing Studies, U.S. Census*

Big variations in metro markets

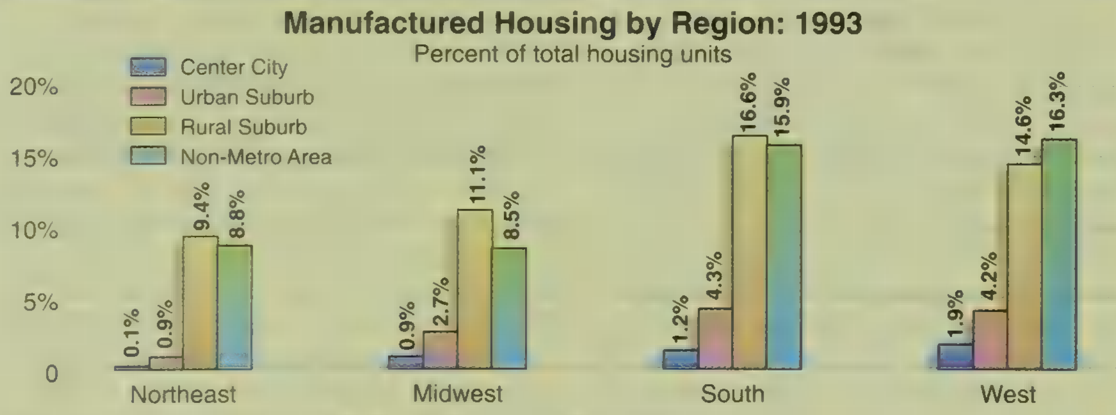
Most housing statistics suggest that there's little variation in markets throughout the nation. The Harvard University Joint Center for Housing Studies report cited above begs to differ. San Antonio's boom, for example, was cut short by the mid-1980's oil bust, while Portland, making up for earlier weakness, skipped the last recession. Indianapolis recently surpassed its 1980's peak. Future affordability may be compromised as price rises outpaced inflation in more than half the metro areas tracked, the study says. ■



Source: *Joint Center for Housing Studies, U.S. Census*

Manufactured housing: regional phenom

"One beneficiary of the strong demand for single-family homes and the decentralization of development is the manufactured-housing industry," reports the Joint Center study, especially in the West and South. Today, manufactured houses are larger, and offer such amenities as central air conditioning. Increasingly buyers also own the land their unit sits on (47 percent in 1993). This makes such housing a better investment because owners get favorable loan and tax treatment, and profit from land appreciation. ■



Source: *Joint Center for Housing Studies, 1993 American Housing Survey*

Charts by Leanor Glynn

Short Takes

◆ New indoor air-quality standard
The American Society of Heating, Refrigerating and Air-Conditioning Engineers has released a revised standard for review, Standard 62-1989, "Ventilation for Acceptable Indoor Air Quality." The standard takes into account such troublesome indoor-air issues as ventilation-system inefficiencies, pollutant off-gassing from materials and furnishings, and microbial growth in ventilation systems. [For more on indoor air, see RECORD, February 1996, pages 36-69.] ASHRAE: 404/636-8400.

◆ Construction contracts slip in July
Construction contracts receded for the third month in a row, reports F.W. Dodge. Both residential and non-residential building declined 2 percent. Of non-residential, manufacturing buildings jumped 23 percent, while institutional types rose 2 percent.

◆ Architect designs musical instrument
The Brain Opera, a computer-generated musical work, was developed at MIT's Media Lab. The structure of the work was intended to incorporate audience participation, and the Lab called on Amherst, Mass.-based Ray Kinoshita, an architect, to devise suitable means for the public to "play" and "compose." She made a forest-like environment that included urns to enclose computer screens, microphones hung within fabric pods, curved-metal joysticks, and headsets shrouded in fabric. The piece ran in August at New York City's Lincoln Center and will travel. Can Kinoshita be considered the first architect of cyberspace? ■

A Shakeup in Seismic Assumptions

By Paul B. Rosta

Aftershocks from the January 1994 earthquake in Northridge, Calif., continue to rumble through the architectural and engineering communities. Surprisingly strong ground motion, combined with the unexpectedly poor performance of steel moment frame buildings in the Northridge quake, may have a long-term impact on design. Another controversial development is the growing interest in a "performance-based" approach to seismic design, which goes beyond minimum code requirements (intended only to protect life safety). It aims to limit damage, reducing economic losses.

Changes driven by Northridge may be reflected well beyond those areas with greatest seismic risk. By 2000, officials from the organizations responsible for America's three model building codes—Uniform Building Code (UBC), Standard Building Code (SBC) and The Building Officials and Code Administrators (BOCA)—will have developed a nationwide model code, the International Building Code, which is expected to incorporate some of the latest seismic requirements. This and improved structural-design techniques will have much more influence than would have been the case 20 or 30 years ago, says David R. Bonneville, vice president of engineering at Degenkolb Engineers Inc., San Francisco. He is chairman of the Structural Engineers of California's seismology committee.

In some cases, the impact of the Northridge quake on design will be visible on the surface. In curtain-walls, for example, stone-veneer systems will require larger joints, more space around glass panes, and wider mullions to cover up the gaps, predicts Tom Sabol, a Los Angeles-based structural engineer and president of Englekirk & Sabol Inc., Los Angeles.

Quakes pack more than expected punch

One repercussion of the Northridge quake that has garnered major attention among geologists and engineers is the "near-source" effect, also called the "near-field" or "near-fault" effect. The terms refer to the phenomenon that "buildings near the fault are getting hit very hard very early" with strong pulses of energy, explains John A. Martin Jr., president of John A. Martin & Associates Inc., a Los Angeles-based structural engineering firm. Buildings within 10 km of the fault could experience forces as much as double those presumed by current design standards, says Ronald O. Hamburger, vice president at EQE International Inc., a San Francisco-based firm specializing in seismic work. Buildings within 2 km of the fault are most at risk, says Bonneville. New provisions under consideration for the 1997 UBC would establish stricter guidelines. At press time the code's guiding International Congress of Building Officials had not yet approved the changes, but they will be included in the Structural Engineers Association of California's influential "Guidelines for Lateral Force Requirements," called the "Blue Book."

Codes to reward simple building shapes

The changes aim to recognize that well-designed, well-detailed and regular-shaped buildings tend to perform well, Bonneville says. Irregular structures tend to "displace or drift quite a lot in certain parts of the building near the irregularity," explains Hamburger. The new provisions would encourage greater redundancy in structural systems, with the result that "an architect who makes a building regular and redundant will be rewarded with lower seismic forces," resulting in lower construction costs, Hamburger says.

The new provisions "are not saying a building needs to be a box or [has to] have the same floor plan as it goes up the building," Bonneville says. "You can still have lots of articulation in the skin, cladding, and things hanging off the building." Nevertheless, Hamburger predicts that the changes will restrict design irregularities, such as three-sided plans or "highly unusual plan shapes." Architects advising clients on site selection should consider likely significant cost increases for development in near-fault zones, Hamburger says.

Should you design to protect contents?

Many owners don't realize that seismic provisions in building codes are intended only to protect life safety—that a building that protects occupants is permissible even if the quake makes it unusable. After owners sustained huge economic losses in the Northridge event, however, the concept of performance-based design has gained more support. What this means is that the owner would specify the level of protection desired and the architect and engineer would upgrade the design accordingly.

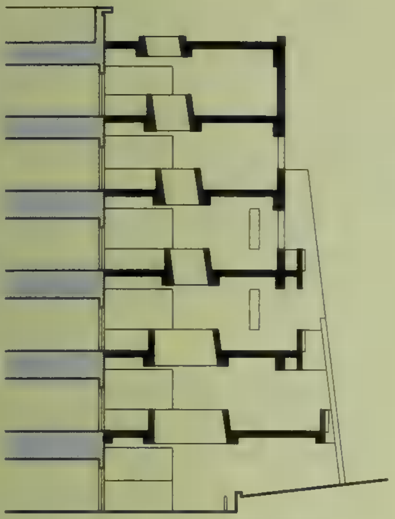
© James S. Russell

[illegible]

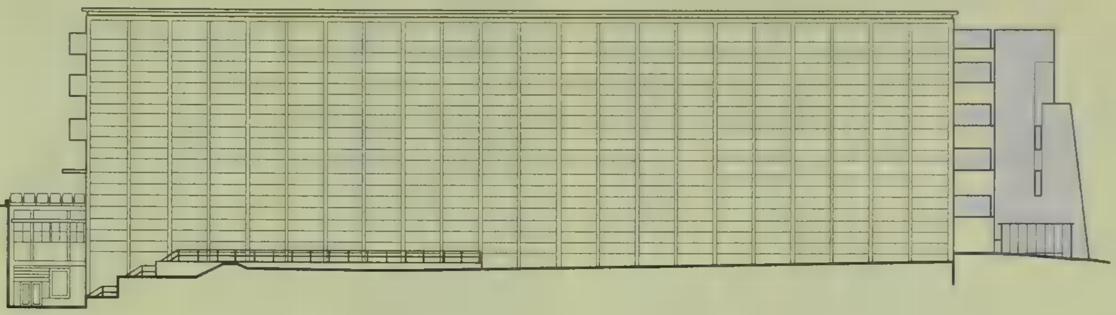
Already critical facilities, such as those for police and hospitals, are designed to a standard that allows uninterrupted operation even through a quake. Now more private owners are deciding that the additional investment is worthwhile. In setting standards for performance, owners and design teams will consider the total value of a building combined with its contents, says Chester A. Widom, a partner in Widom Wein Cohen, Santa Monica, Calif. His firm recently designed a $30-million medical building for a major California company. Because the structure houses $350-million worth of equipment, the owner regards the cost of base isolation and redundant structural systems as a prudent investment. The building will be fully functional and self-sufficient for six days after a major quake, Widom predicts, long enough that services should be restored.

Performance design standards "will have a major impact on the architect and the architect's team in designing a building," Widom says. The architect and engineer will base architectural and structural choices on the owner's willingness to invest in design ele-

California's Northridge Quake has upended assumptions about steel-frame design, the adequacy of building codes, and the dangers posed by falling bookshelves and flying light fixtures.



EAST ELEVATION/SECTION



EAST ELEVATION

Israel Callas Chu Shortridge Design Associates seismically reinforced this 1959 classroom building at UCLA through an external concrete-framed stair tower buttress (toned area above). It was the least obtrusive alternate offered by engineer Nabih Youssef & Associates and permitted reorientation of the entry to reflect new traffic patterns.

ments that will protect the building's post-quake habitability and contents. "Instead of arbitrarily accepting the code as being the standard by which an individual owner would build a building, the owners will face the issue of what they wish the building to do," Widom explains. The architect's responsibility is "to understand that the technology is out there" and to present all the options to the owner, Bonneville says.

Over the next several years, the Structural Engineers Association of California will develop guidelines for performance-based design with an aim to changing the UBC, says Bonneville. In a separate $8-million project funded by the Federal Emergency Management Agency, the Applied Technology Council (ATC), Redwood City, Calif., is developing guidelines for seismic rehabilitation of buildings as a subcontractor to the Washington, D.C.-based Building Seismic Safety Council. The guidelines will "allow an owner to design for damage control," says Chris Rojahn, ATC's executive director.

As promising as performance standards sound, there are skeptics. "It's very difficult to predict exactly how buildings are going to perform," Sabol says. "I'm not sure we can relate them with great accuracy to all kinds of earthquakes . . . . To expect too much from this in the beginning is probably unrealistic." EQE's Hamburger acknowledges that "it's easy to be off in ground-motion predictions by 30 to 40 percent or more." Still, he maintains that because it is more conservative, "any structure designed to performance standards would have significantly less damage" than code-minimum structures.

Unexpected steel-frame failures

Indeed, if anyone thought seismic-damage prediction was an exact science, the Northridge quake burst that bubble. In recent years, use of a steel moment-resisting frame to support buildings "almost became a panacea" in seismic zones, says Charles H. Thornton, principal at Thornton-Tomasetti Engineers, a New York City-based firm specializing in designing tall buildings for seismic zones, but "unfortunately it didn't perform."

The quake produced unexpected damage to hundreds of moment frame buildings located near the areas of greatest shaking. At column-to-beam connections, welds cracked, columns fractured, and bolts sheared off. A mandatory Los Angeles city inspection program for buildings in high-risk areas has so far revealed damaged connections in about two-thirds of 200 buildings, says Karl Deppe, an assistant chief of the city Department of Building and Safety. Although no buildings using the system collapsed in the Northridge quake, weakened joints are at risk in a future strong temblor, engineers say. Deppe noted that steel-frame buildings in the Kobe quake, one year after Northridge, sustained "exactly the same kind of damage."

Controversy continues over the source of the problem, with the steel industry blaming design, and engineers criticizing components and workmanship. Among structural engineers, Hamburger says, a consensus has developed that some combination of inherent design deficiencies, poor workmanship in the field, and inadequate toughness of steel welding materials led to the damage. Connections can be repaired with little permanent architectural intrusion, but repairs can disrupt business, points out Jefferson W. Asher, a principal in KPFF Consulting Engineers Inc, Santa Monica.

A switch to concrete framing?

The damage is challenging the preeminence of the steel moment frame, once the system of choice for most commercial and institutional buildings. "We are examining the old 'this will be a moment frame' routine and looking at other systems now," engineer Martin says. "People are looking at alternative systems a little more closely," agrees Sabol of Englekirk & Sabol. In planning a fast-track project, "I'd probably stay away" from the steel-moment frame, says Hamburger.

Because of the need for testing and additional reinforcement (following pages), the cost of connections has "probably doubled or even tripled" since the Northridge quake, says Hamburger. Inspection and repairs cost up to several thousand dollars per connection. Concerns that much of the damage stemmed from inadequate workmanship will require more inspections in the field, increasing project costs.

Steel moment-resisting frames earned popularity because of the flexibility they offer in placing bays, walls, and non-structural elements. Now, according to Martin, "Engineers are going to have to start looking at [limiting] that flexibility" in designing structural systems. Some owners, architects, and engineers are choosing more conservative, seismic-design concepts such as eccentric-braced frames (EBF). Thornton says his company has recommended EBFs on two projects in California earthquake zones. Unlike moment-resisting frames, EBFs do not rely on the through-thickness capacity of the column flange, thus taking the pressure off the connection, Thornton explains.

> *"Today you brace and tie all lighting fixtures, ceilings, and shelving, but I think owners better go back and retrofit those things they haven't."—Chester Widom*

Hospitals present special challenges because of more demanding seismic standards and the evolving health-care market. Hospital owners prefer the flexibility offered by steel moment frames, which allow about 30-ft clear spans as opposed to 20 to 24 ft for concrete frames. "In planning hospitals, you try to produce as open a floor plate as possible because hospitals are constantly undergoing renovation work," explains James L. Harman, project manager for Hellmuth, Obata & Kassebaum, referring to a new building at St. John's Hospital and Health Center in Santa Monica. "The more interruptions you have to the floor, the harder it is to retrofit in an intelligent manner."

In some cases, hospital clients are opting for eccentric-braced frames, says Kenneth E. Lee, principal at Lee, Burkhart, Liu, a Santa Monica, Calif.-based firm specializing in healthcare, [illegible] taking into account the rigidity of the braced frame bays. "We've tried to lay out spaces so they're repetitive," says Lee, [illegible] with [illegible] ional [illegible] likely [illegible] and [illegible]

In the short term, "you'll see more concrete buildings" says Asher of KPFF Consulting Engineers. More engineers are looking at concrete moment frames for buildings up to 10 stories tall, Hamburger reports. "Concrete frames were regarded as more difficult to design before Northridge, but concrete design didn't change a whole lot" after the earthquake, because most such structures performed according to expectations, he explains. Although the concrete moment frame is more expensive than the steel frame, Asher says, "You can come up with very economical concrete solutions that produce good performance."

For all the present uncertainty, some engineers still believe that the hesitation about using steel moment frames is only temporary. Despite the extra cost, "The desirability of open-type design still seems to be driving people to steel frames," Hamburger says. Asher predicts that "in the not too distant future we will have an acceptable solution." The problem has sparked research and testing at various structural engineering firms, yielding a variety of concepts for improved design of the frame. The designs aim to strengthen the connection by carrying the force away from the connection's weakest point—the weld (opposite). Some have been provisionally accepted by localities. The steel moment frame will remain the predominant system "but with a lot more care about quality," Deppe says.

Base isolation passes the test

The Northridge quake has also sparked new interest in the still-uncommon method of base isolation, which uses steel-and-rubber shock absorbers to separate the building from its foundation. The Northridge earthquake, says HOK's Harman, was the first major earthquake to demonstrate a significant amount of overturning and uplift, so engineers are accounting for these forces. The superstructure can absorb energy, but "trying to isolate the superstructure from ground motion is, in my opinion, the best way to do it," Harman says. Owners have used base isolation to protect buildings providing essential services or with sensitive contents. Says Michael Bobrow, chairman of Los Angeles-based BTA Inc., "You can have a design that reflects the functional requirements internally and still use base isolation."

St. John's Hospital's new main building will be base isolated. HOK is designing the hospital in joint venture with the Santa Monica office of Stone Marraccini Patterson, and will use a concrete frame for the hospital's two below-grade levels. "Without adding non-essential weight to the building, we've increased the ability to fight overturning and uplift and we're putting the mass of the building where we need it," Harman says.

The Northridge earthquake has also spawned greater awareness and new developments in the use of viscous dampers. "Five years ago, we didn't even know they existed," says Christopher C. Martin, managing partner at Albert C. Martin Associates (ACMA), a Los Angeles-based architecture firm. ACMA is principal design consultant for the retrofitting of Los Angeles City Hall.

These shock absorbers, generally about 10-ft long, are placed on the top chord of a shear wall and allow the shear wall to transmit energy from its diaphragm to a structure's frame over a period of micro-seconds rather than all at once, Martin explains. The dampers minimize rotation placed on the moment-frame joint, says Asher.

The design challenge is to integrate viscous dampers into the superstructure and still maintain the structure's architectural appearance, Asher says. Although dampers are most effective on the building's exterior, this tends to "conflict with architectural appearance," he notes. Dampers can also be hidden effectively in a ceiling.

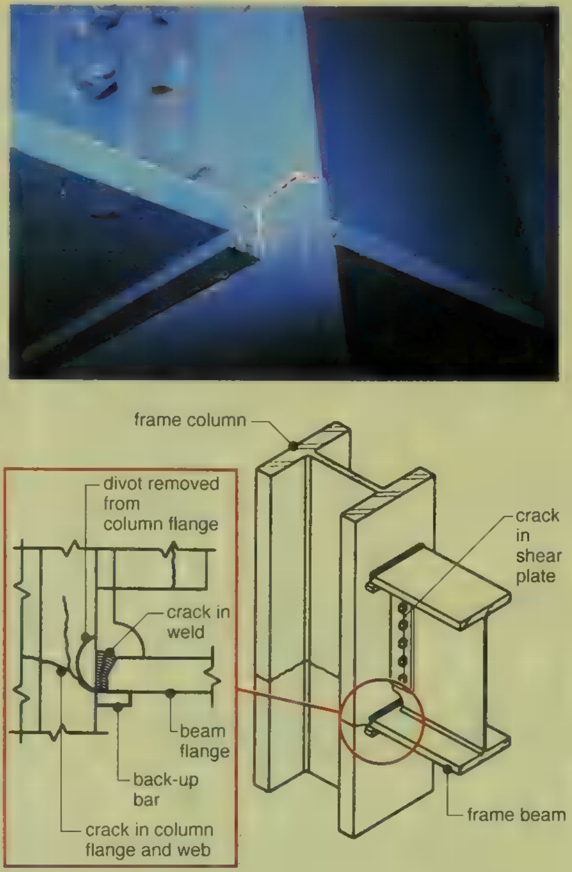
When light fixtures fly

For all the attention being paid to structural systems, the Northridge quake also pointed up the importance of damage caused by inadequately anchored non-structural elements, such as light fixtures, transformers, fans, ducts, and ceilings. "I would say that additional leadership is probably needed" in this area, Sabol contends, because problems with the Northridge quake suggest that no single design professional now takes charge. "Architects don't want to assume additional responsibility for [components] they don't feel qualified to design," he explains. Structural engineers aren't being compensated to design bracing for non-structural components, so "it continues to fall through the cracks," he argues.

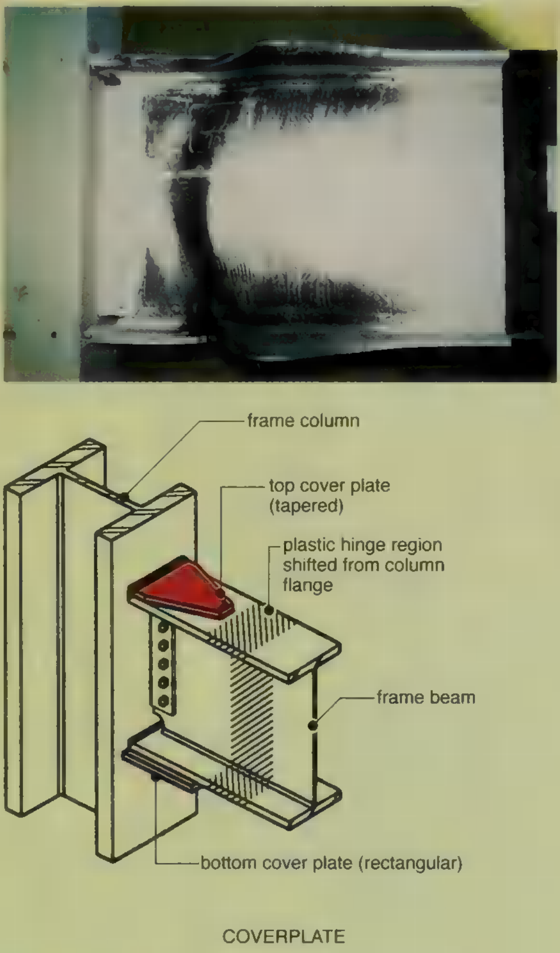
Bonneville says that architects should be aware of a "massive change in design of non-structural components" coming in the 1997 UBC, although this will more immediately affect structural and mechanical engineers. Before Northridge, he points out, the code did not acknowledge the greater forces exerted upon non-structural components in upper stories by higher accelerations. The new provisions will not "change where things are put," but instead "will affect the way things are braced and anchored," Bonneville says.

Even though the institutional work Widom Wein Cohen specializes in has always required close attention to non-structural elements, Widom says, "certainly our consciousness was raised" by Northridge. "We're spending much more time looking at details, making sure non-structural elements are as secure as they could possibly be." Owners whose buildings are legally non-conforming are considering bringing their fixtures up to code, Widom says. "Today you brace and tie all lighting fixtures, ceilings, and shelving, but I think owners better go back and retrofit those things they haven't," Widom says.

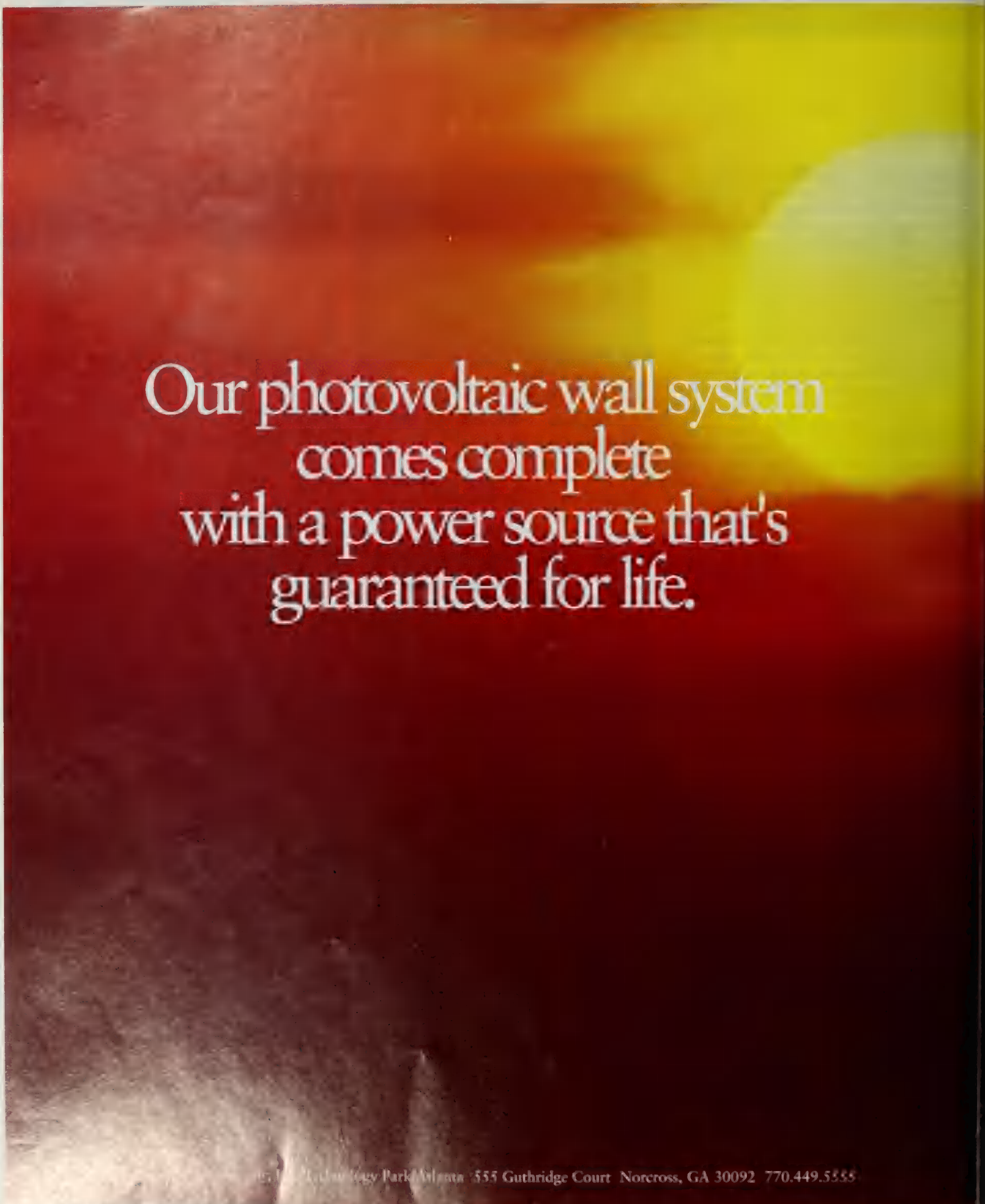
Perhaps the most intangible impact of the Northridge quake is on the dynamics within the project team. Sabol claims that he has found "a greater willingness on the part of architects to accommodate more of the structural impositions on the project than in the past. It's made some of our work easier." The earthquakes have "actually drawn all of our team members together because it's a common enemy—it's a common burden that we share," says Lee of Lee Burkhart Liu. ■



Surprise failures: *Tests of steel moment resisting frame construction that attempted to duplicate Northridge quake motions showed some unexpected weakness in the connections. Crack in the tested connection (top) propagated from the bottom beam flange through the column flange. The drawing above shows other types of failures.*


frame column
top cover plate (tapered)
plastic hinge region shifted from column flange
frame beam
bottom cover plate (rectangular)
COVERPLATE

Remedial connection: *Engineers tested several alternatives to improve moment-frame connections. Among the most successful is shown in the drawing above. The addition of cover plates (tone) welded to the beam reduced forces on the beam-to-column welds and moved the plastic hinge (deformation that absorbs energy) away from the vulnerable column—evident as the dark area in test specimen (top) and hatched area in drawing. Testing was by Englekirk & Sabol Engineers; University of Texas, Austin; and Georgia Institute of Technology, Atlanta.*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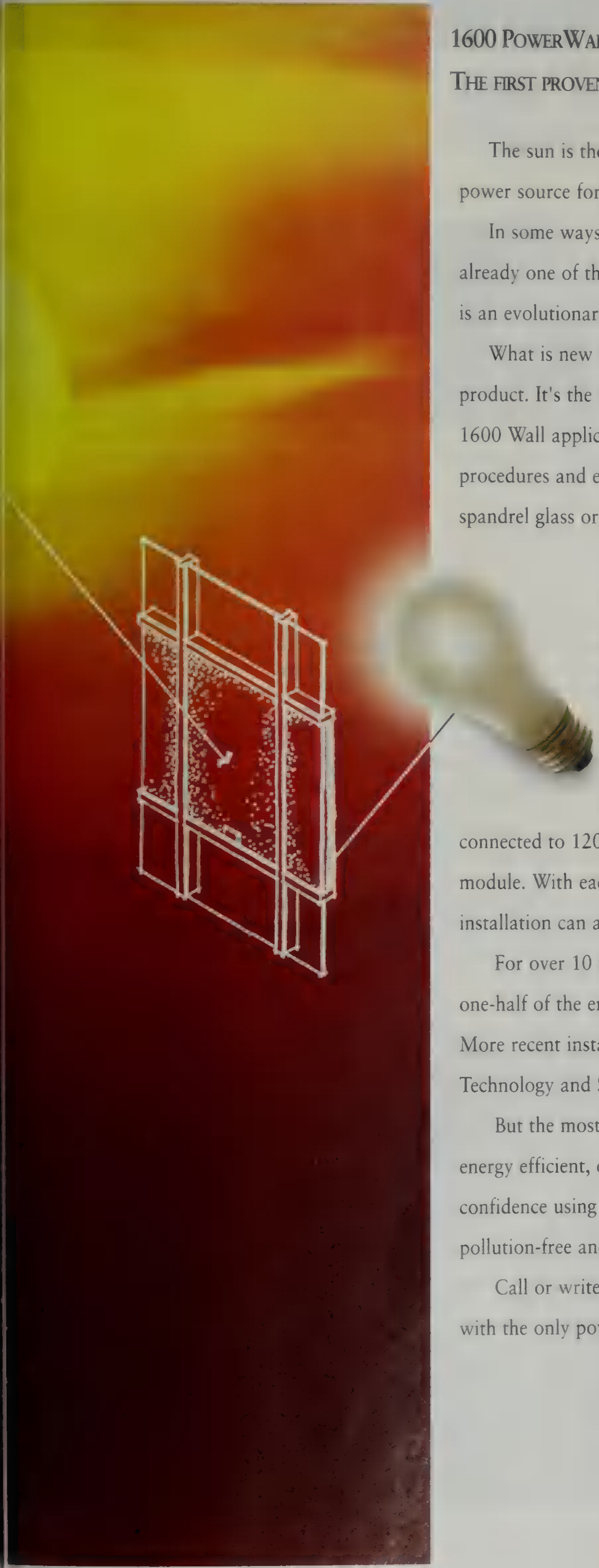

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Satisfying Users: Would You Put Your Profit on the Line?

Imagine your client asking that you put all of your profit for a project on the line: if you, the architect-engineer and your contractor partner meet schedule and budget goals, you both receive two-thirds of your profit. Three months after the building is completed, its users fill out a questionnaire—painstakingly negotiated between you and the owner's representative—that is designed to measure whether quality goals established for the building during the design phase were met. If the users agree that they have been, you receive the remaining one-third of your profit. If not, you don't.

There is nothing imaginary about this scenario. Such an agreement is in force between Ciba-Geigy, a pharmaceutical manufacturer, for its new Tarrytown, N.Y., Additives Laboratory, and the design-build team of HLW International, a New York City-based architecture-engineering firm, and Sardoni Skanska Construction Co. of Parsippany, N.J. The carefully negotiated system of incentives seems to have worked: the building was completed early and under budget. The questions that loom ahead are whether such remuneration systems will become commonplace, and whether or not they are good for the practice of architecture and the quality of the built environment. If the answer to the first question is yes, what does it take to make them work?

Fast, under-budget work rewarded
HLW originally worked with Ciba-Geigy during the programming and conceptual-development phases of the design of the laboratory. Sardoni Skanska then contracted with HLW to complete the schematics and design-development and construction drawings. Both entered into an agreement with Ciba-Geigy to share in part of Ciba's savings if budget, cost, and quality goals were met.

HLW was rewarded with $100,000 for meeting milestones for document delivery, and for meeting cost verification goals at 50 percent of design completion. Sardoni Skanska was rewarded for beating construction deadlines and bringing the project in under budget. Their reward was $100,000 for each month the project came in ahead of [illegible] share of the $3.3 [illegible] by Ciba-Geigy when the project came in under its guaranteed $40-million budget.

Leevi Kiil, CEO of HLW International (left), and Mike Healy (right), president of Sardoni Skanska, put a substantial portion of their profit for a Ciba-Geigy lab on the line, based on the outcome of a user survey.

These sorts of incentives are not exactly new. But letting the end-users vote on their satisfaction with the building to determine whether the design-build team receives a share of their profits is. At stake for Sardoni Skanska is $205,000 and for HLW $90,000.

Leevi Kiil, chief executive officer of HLW, says, "I feel good about projects that we do conventionally. But I think what did happen and had to happen because of the quality incentives was that we not only had to meet the time and budget standards, we had to aggressively bring the lab users into the process so they knew what they were getting and took part in the process of designing the building." Goals for the performance of the building were established between the design-build team and a team of future users of the building early in the design process, and tracked throughout design and construction in weekly meetings.

Few of the questions that users will "vote" upon when answering the questionnaire, 90 days after occupying the new lab, are subjective. Most have to do with measurable criteria that a well-designed laboratory should meet: Is there enough electric light and daylight? Do fume hoods function properly? Is acoustical control sufficient? Is thermal comfort adequate? Were staff members kept well-enough informed during the construction process? All 15 questions on the questionnaire can be answered with a simple yes or no, and all were agreed to by Ciba-Geigy, HLW, and Sardoni Skanska. For the bonus to be collected, the building must achieve a 75-percent-favorable rating.

A user-determined incentive at the end of the project serves several useful purposes. It makes satisfying the client absolutely critical—although most architects would say that as far as their own practices were concerned, it always has been. Beyond this, the user-quality incentive creates a critical check-and-balance mechanism not found in situations where only time and budget incentives are used: with quality driving the end-result, it keeps the design-build team from selling out and simply building the building as quickly and cheaply as possible.

Mike Healy, president of Sardoni, elaborates, saying, "We collectively have a good hunk of change riding on the fact that the people living in the building are happy with the facility. It's not just a 'throw it up and worry about it later' type of deal. Making the users happy is really important to all of us, not only from a design perspective but also from a construction perspective—the level of finish and quality of workmanship it would take to make them happy with the facility."

Incentives create teamwork
Ciba-Geigy prefers this type of arrangement not only to get the most from their fees but also to promote team-building. Ciba-Geigy project manager George Batcher explains, "Typically when we deal with providers of architectural or engineering services, we don't like to pay the normal fee structure. We like to make earnings on the job performance-related. We like to deal with those people who are willing to put something at risk along with us, to assure our satisfaction in the final outcome."

It might seem that Batcher has little faith in the effort design-build teams typically put into their work, but neither HLW or Sardoni Skanska were put off by this implication. Both seem happy with the incentives approach and all three parties agree that the incentives encourage teamwork. "You actually find that team members enjoy the process," says Healy. "It has a tendency to pull the companies together into one team to achieve the project goals.

HLW International and their design-build partner Sardoni-Skanska are gambling nearly $300,000 of their profits on an end-user survey at the just-completed Ciba-Geigy Additives Laboratory in Tarrytown.

"We have the same commitment, we're judged on the same criteria, and the best part of the process is to actually establish those goals and criteria, because it functions as a team-building process." Kiil seems to agree that putting the profit for the job on the line was a motivator to their success. "The collaboration between the two firms and the client was very important: if one failed, essentially the other failed. If one succeeded, we could all succeed together."

Making it work

Whether one agrees with the use of incentives or not, there are lessons learned from listening to the parties involved in the Ciba-Geigy project. One is that the process won't work unless the owner has a commitment to deal fairly with the design-build team. If the owner's primary motivation is to take money out of the pockets of the design-build team, the process surely won't work. Kiil comments, "That the client was willing to deal with us fairly and take the time up front to plan this out properly were the main issues. If the client is willing to do that, I would deal with any client, no matter what the building type, on this kind of basis."

A second lesson is that user input throughout the design and construction process is critical and criteria on the post-occupancy survey of end-user satisfaction be as objective as possible, if not outright measurable. According to Batcher, "We identified the parameters of the new facility that the people had voiced the greatest desire to attain, and we tried to prepare a survey that would address those features and the manner in which the project was carried out. I think the criteria we chose to ask questions about are pretty measurable; it's not just asking 'how do you like this place?' It's very specific."

"You would think the bonus would be over and above what they're getting, not jeopardizing their livelihoods." —Richard Hobbs, of the AIA Practice and Prosperity Initiative.

The larger context

In a larger context, some situations may not be right for the use of end-user satisfaction evaluations. Robert Gutman, a lecturer on architecture at Princeton University, says, "Overall I like the idea of users evaluating their buildings. It seems to go along with trends in other professions—hospitals undergo a lot of user evaluation these days, and litigants are becoming much more involved in how their cases are handled.

"However, I have evaluated some laboratories, and found that there is a great deal of variance in the attitudes of scientists toward their labs. A scientist whose grant has just been cancelled may take it out on the building. Another issue is whether we evaluate the whole building based on the viewpoint of the janitors, or the executives, or just the lab managers and technicians, or whom?"

Also, an office building might house people working in a corporate culture that has such serious problems that the workers would not be satisfied with any building, despite the best efforts of the design-build team. Would a questionnaire about whether a building met its initial quality goals be unaffected? Some workers, for example, might resent leaving an inadequate building with private offices for a new one with cubicles. To them, sumptuous lobbies or a sun-filled atrium may not be as important as being able to close a door. Others may believe money that should have gone into pay and benefit increases, research, new equipment, or product development was diverted into capital spending. Their vote might go against the building. No matter how good a job the design-build team may have done in meeting their quality goals, users may deem they have fallen short for any

*(Continued on page **121**)*

© Peter Paige photos

Users of the new Ciba-Geigy Additives Laboratory (left and above) will fill out a very objective questionnaire three months after occupying the building. The design-build team receives additional profit if the facility receives a 75-percent approval rating.

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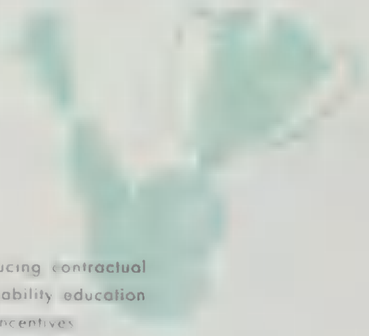

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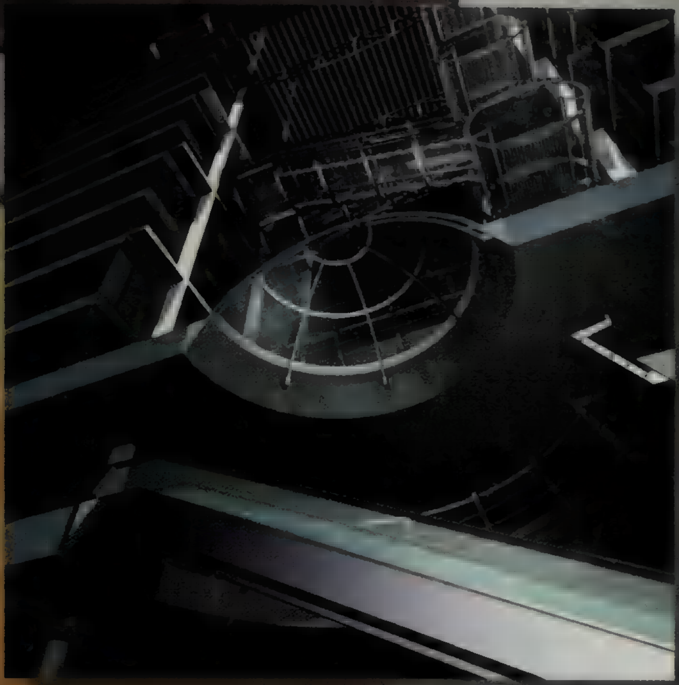

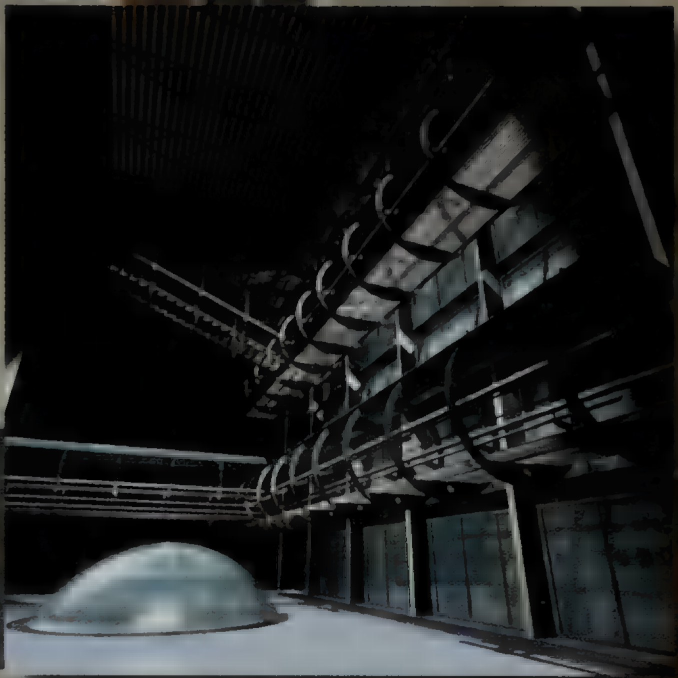

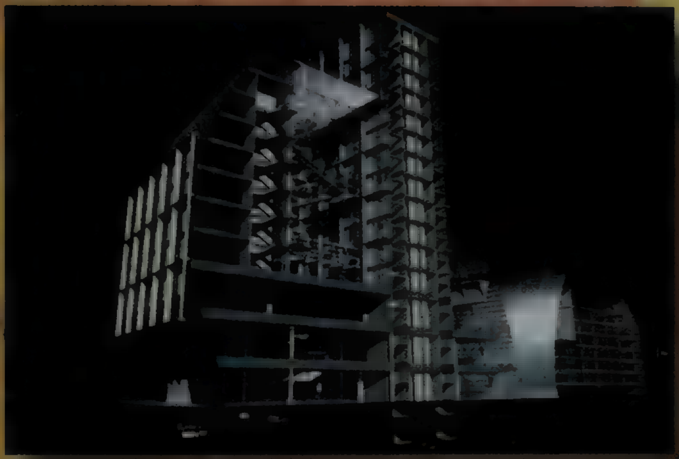

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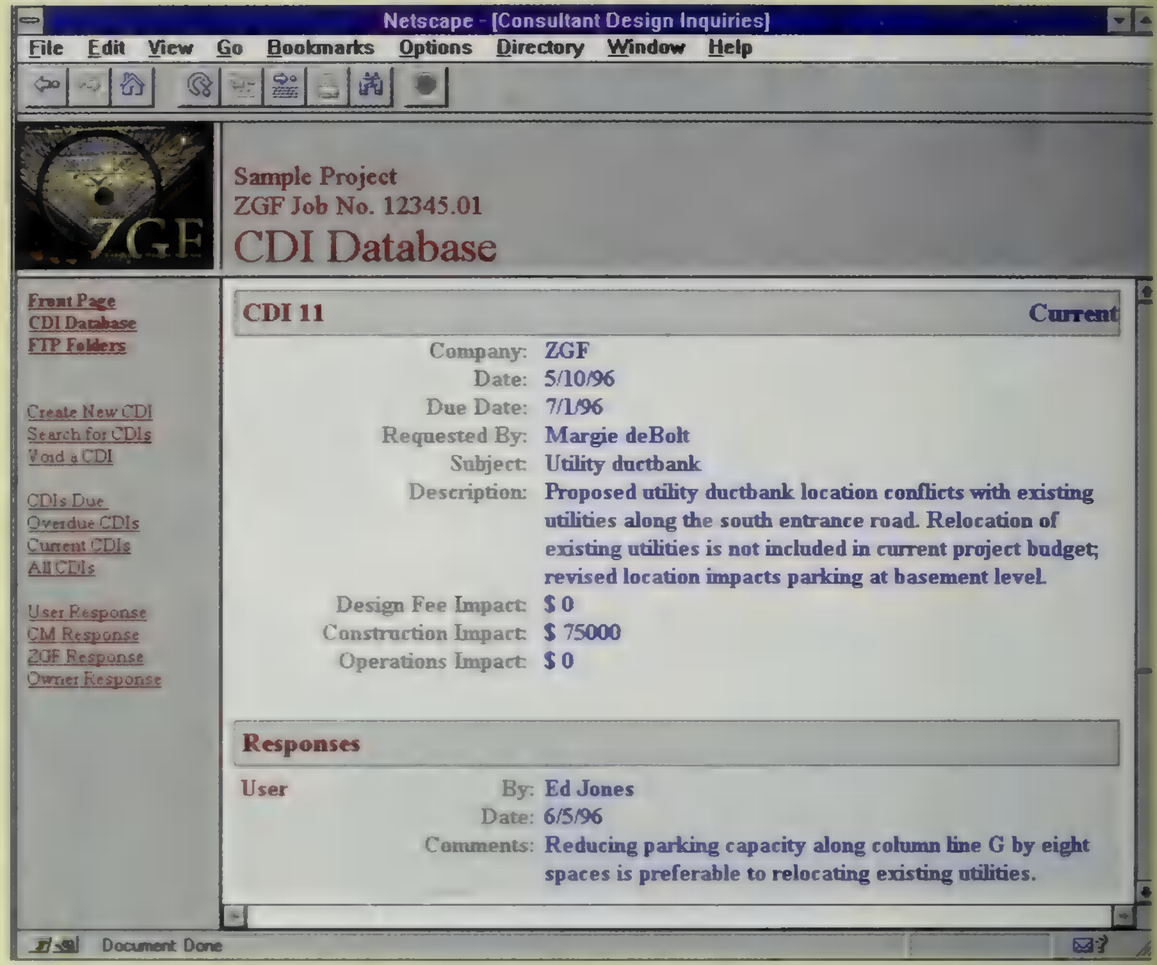
Merging Virtual Technologies Change the Rules of Collaboration

By B.J. Novitski

While architects have benefited from both higher bandwidth telecommunications and more powerful desktop computers, the combination of these technologies now promises to ease communications burdens, enabling distant professionals to work with each other almost as if they were side by side. Today audio, video, internet, and electronic whiteboard technologies are noticeably simplifying some of the management and administrative burdens of construction communications. Those exploring the leading edge of such technologies are seeing entirely different ways people can interact—and an entirely new design opportunity for architects.



Sample Project
ZGF Job No. 12345.01
CDI Database

CDI 11 Current

Company: ZGF
Date: 5/10/96
Due Date: 7/1/96
Requested By: Margie deBolt
Subject: Utility ductbank
Description: Proposed utility ductbank location conflicts with existing utilities along the south entrance road. Relocation of existing utilities is not included in current project budget; revised location impacts parking at basement level.
Design Fee Impact: $ 0
Construction Impact: $ 75000
Operations Impact: $ 0

Responses

User
By: Ed Jones
Date: 6/5/96
Comments: Reducing parking capacity along column line G by eight spaces is preferable to relocating existing utilities.

Not for big firms only

One firm realized benefits from a very simple approach. Participating in forums on such commercial on-line services as CompuServe and America Online has helped the four-person Minneapolis firm of Strapko, Pahl & Associates, Ltd., identify clients and out-of-town associated architects in their dental-office design specialty. They use the services' e-mail facility for messaging and file sharing with engineers. "In small firms," says James Strapko, "we have to think long and hard about every technology purchase. We're less interested in experimentation than in finding something that works." Strapko sees the next step as client presentations via desktop video-conferencing. Ironically, their obstacle is persuading the client to invest in the increasingly less-costly equipment.

NBBJ, one the country's largest firms, is using telecommunications and network technologies to tie its offices in seven cities more closely together. With most design and construction document work done with CAD, the firm has standardized the software operating on each office's local-area networks (LANs) and instituted wide-area networks (WANs) to connect the LANs. Now anyone in any office can share files across the country as easily as across the room.

CAD files can be easily shared via the WAN, and some face-to-face meetings can be replaced with video-conferencing. According to Tim Stiles, the director of information systems at NBBJ's Seattle office, this connectivity has several major advantages. He can more easily trouble-shoot technical problems at the satellite offices because he can have access to their data. Also, NBBJ can share human resources. If one office needs a larger design team temporarily, it can "borrow" staff members who are geographically distant without requiring them to relocate physically.

This staff sharing also extends to the firm's specialists. A medical-equipment planner, for example, who resides in one city can be listed as part of a team in a proposal by any other office. This gives a small office the ability to compete for more complex health facilities than it could otherwise. Interestingly, Stiles says, clients have readily accepted this practice. They are now so accustomed to the "globalization" of their own businesses, that they easily believe that an architecture firm can distribute its expertise nationally. Stiles concludes: "This makes us more fleet of foot in satisfying the needs of our clients."

Quick query response

Zimmer Gunsul Frasca, in Portland, Ore., a technically advanced large firm, has constructed a means to support communications within a design team using off-the-shelf technologies. They set up what they call a consultant design inquiries (CDI) database on a private World Wide Web site, or intranet (above). On a large health-care project, consultants, the client, user groups, and the construction manager share information during the design and construction-documents phases. When consultants have a question, they post it to the ZGF Web server,

B.J. Novitski (bjn@efn.org) is a freelance writer specializing in the use of computers in architectural practice and education

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Continuing Education

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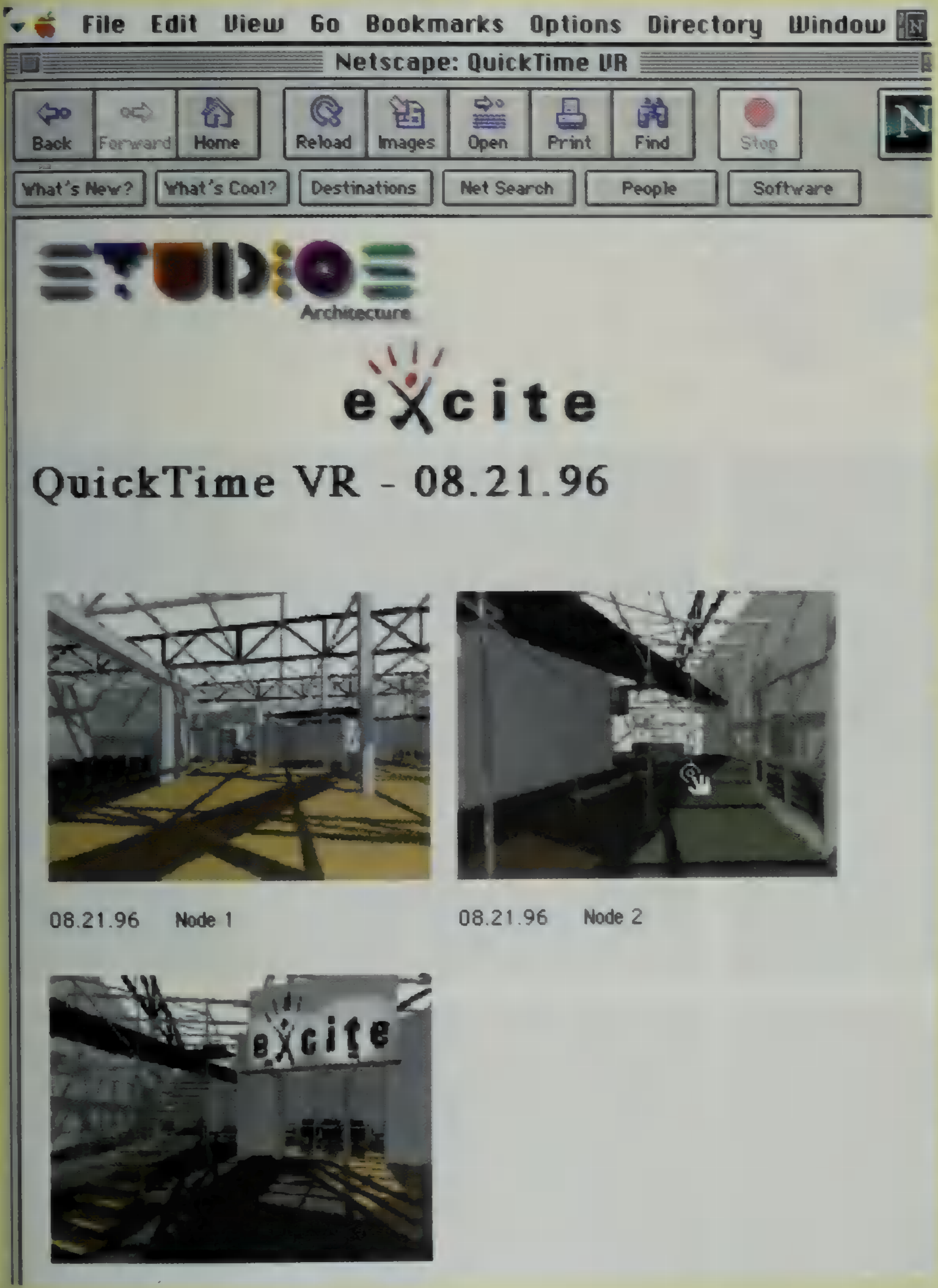
On-line environments are emerging as a useful way for ever-larger and more complex design and build teams to ease communication and widen participation .



QuickTime VR - 08.21.96

08.21.96 Node 1

08.21.96 Node 2

Zimmer Gunsul Frasca handles day-to-day requests for project information through a private site on the World Wide Web (opposite). Each user needs only browser software and the project's password. Studios Architecture updates models of a design and posts them on a special Web site (above). Users can move around or walk through the models.

which is accessible by password to authorized members of the design and client teams.

Anyone on the team can view the questions, respond, and view responses by others. Unlike e-mail, where queries can be hard to track and users can only view graphics files if they have the same software as the sender, the Web server displays all graphics and text, whether users have PCs, Macintoshs or Unix workstations. Team members need only common Web-browser software, which means there is virtually no training required. The Web site also contains regularly updated project data, CAD files, meeting notes, schedules, and standards.

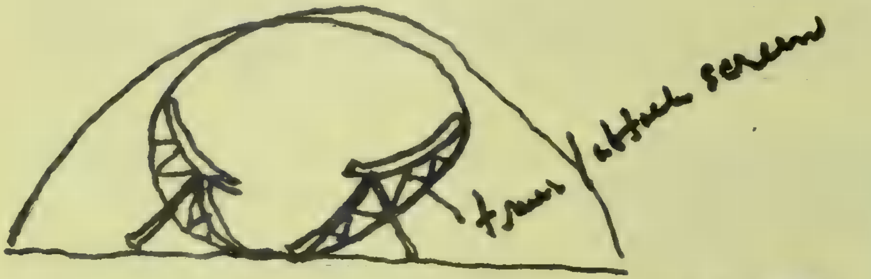
The idea, says ZGF's Ken Sanders, is to give a geographically distributed team easy access to key information about a project without each team member having to track inquiries and responses independently. Among the advantages of the system is that the current status of queries is available to everyone. Also, says Sanders, it heightens awareness of which unresolved issues are key at any given time.

ZGF didn't write computer code; it put the system together with commercial software. What's experimental here, Sanders notes, is finding the right dividing line between issues that are best resolved using the CDI database and those that should be dealt with in meetings or more formal communications. The firm is currently developing a more ambitious Web-based system for tracking requests for information, submittals, and other construction-phase communications.

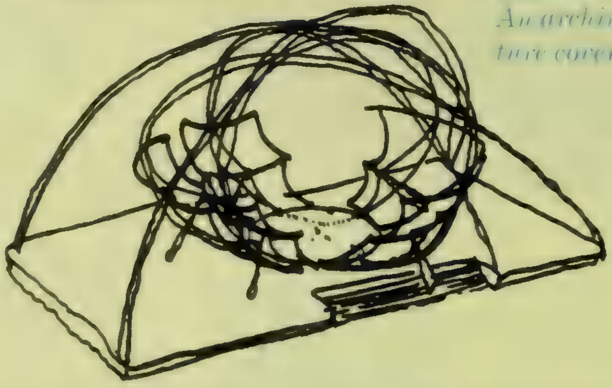
Mixing old and new technologies

Both architects and computer hardware and software makers are pushing electronic collaboration to new levels of sophistication. Intel and AutoDesk sponsored an experiment in which Los Angeles architect Eric Owen Moss combined a variety of media through computer and video-conferencing technologies to communicate a complex design to an audience thousands of miles away.

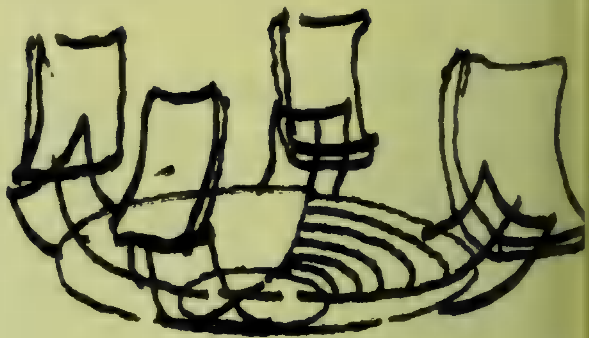
Moss and his team worked entirely from California with French architect Frederic Genin and a client group, both working in Monaco on an exhibition hall for Imagina, Europe's



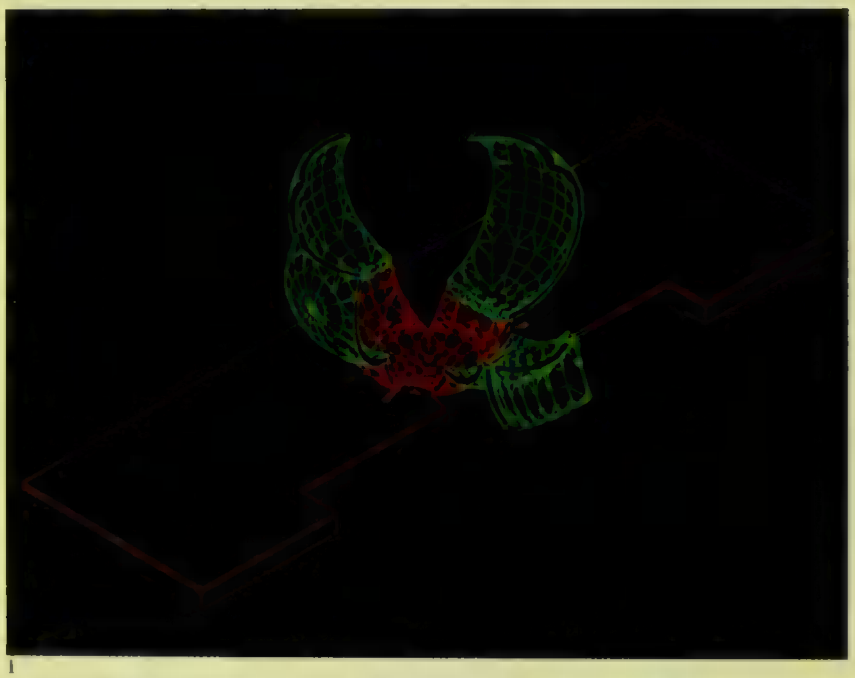
Eric Owen Moss mixed CAD and conventional media in a design for an exhibition hall. Scanned-in sketches were presented on-line.



The hall can be used as a single spherical volume or divided. An arching structure covers exhibits.



The glass-roofed exhibit area is temporary. Removed, sections of the hall can open to harbor views.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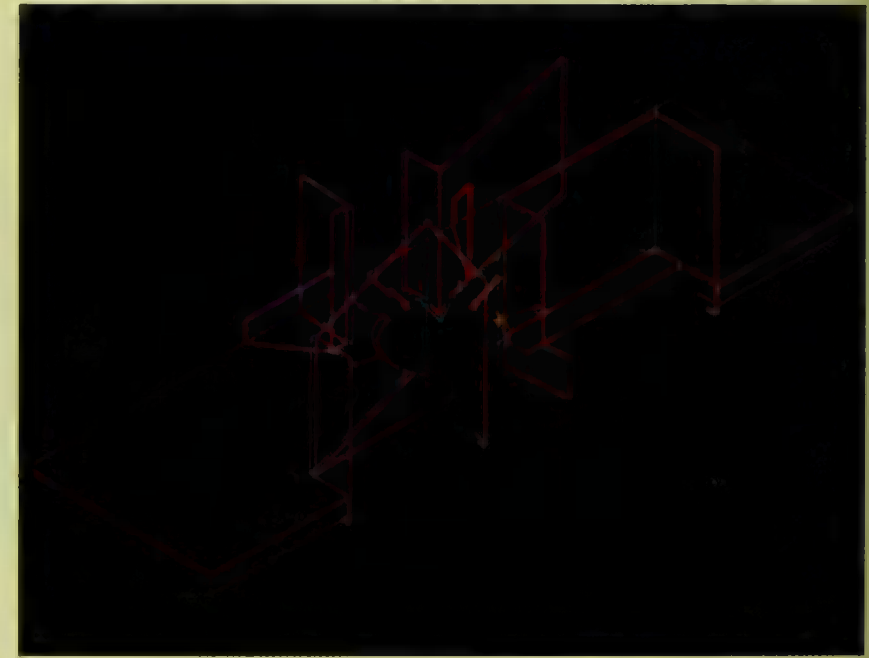
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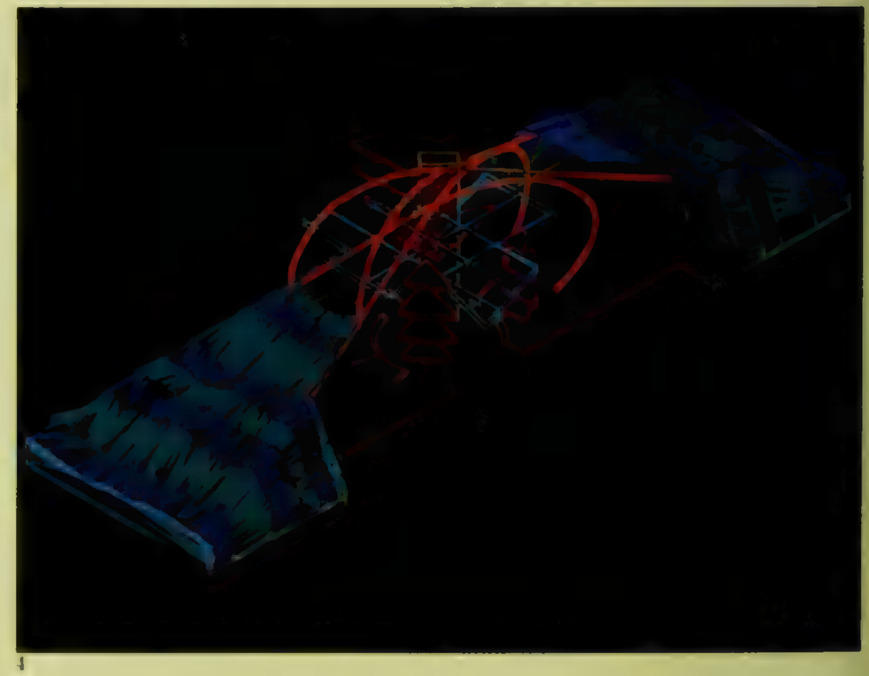
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largest computer graphics show. They communicated through Intel ProShare, software that supports video-conferencing from computer desktops. High-speed ISDN telephone lines simultaneously transmitted computer files, video imagery, and audio signals. In addition, the software's "shared notebook" displayed pre-recorded text, images, CAD files, and any digital or digitized material participants wanted to share. All the attendees could view the same "page," mark it up, "flip" to other pages, and use pointers to draw others' attention to an item being discussed, all while carrying on a conversation.

In preparation for design, Paul Groh, an architect on Moss's staff, created several digital stills from a video of the city's waterfront, which Moss used to study the urban context. Then the architect began sketching—his customary design process (opposite). Groh and others on the staff built both a physical and an AutoCAD model of the design. (The two kinds of models "inform each other," explains Groh.) Groh assembled the computer drawings and scans of the freehand sketches on the ProShare notebook. While Moss explained the design concept in video-conference, he pointed his computer's camera at the physical model and, with the gestures common to any architectural presentation, was able to communicate the complex form more thoroughly than if he had had to choose between electronic and traditional media. In theory, Genin could have also worked more on the AutoCAD model, thus adding to the interactivity of the design process, but because of the complexity of the design, Moss's office did most of the work.

Groh observes that the unconventional communication process had its growing pains. For example, the remote parties had to invent a protocol for deciding when it was the other's turn to draw. In time, he says, everyone became more comfortable. "It was probably like this with the first telephones," Groh says. "People had to learn what to say when they picked it up and how to know when to let the other person talk."

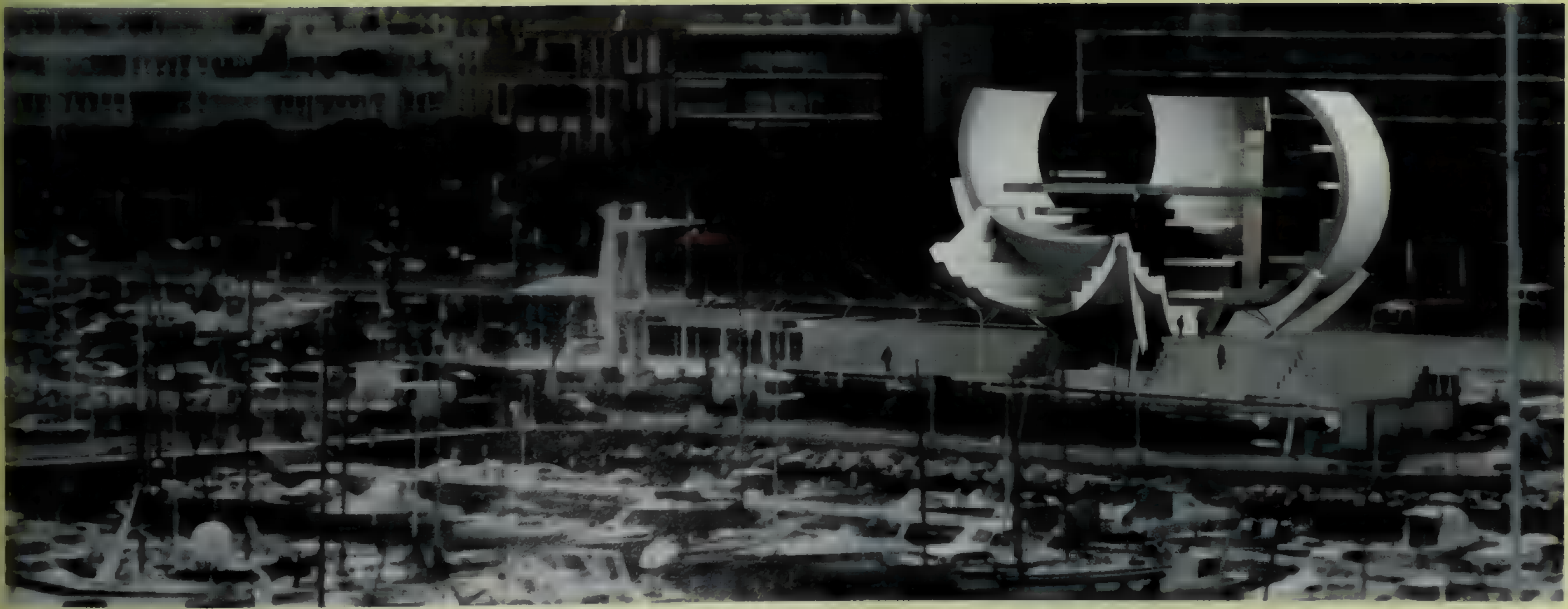
Moss is somewhat skeptical about whether these technologies will have a profound effect on the practice of architecture. He notes: "It would have been very difficult and time-consuming to communicate this kind of complexity in traditional media. So the technology was a tremendous asset. But however dexterous the software is, there still is something imponderable in the content of the work, which architecture will always be about. Ask yourself: Have word processors meant we have more Dostoevskys? Has CAD given us more Gaudis?"

Still, as long as technology adds to, and doesn't detract from the number of ways a design can be represented, Moss is happy to continue pushing the limits of how technology can serve his design process.

Remote-control walk-throughs

Helping clients understand a project before it is built has always been one of an architect's key challenges. The most effective techniques, such as renderings, physical models, and computer imagery, are expensive and time-consuming. And very often architects must stop what they're working on in 2D media in order to create these 3D visualizations.

After sketches and physical models were begun, AutoCAD models take the design to greater detail . One theater permutation is cruciform (1). Glass walls around sphere supports (magenta) show possible divisions of exhibition space (2). Metal pipe struts (3) support a glass roof over the exhibit space (4). The computer rendering below shows the hall, without the exhibition structure, set within a digitized city view.



Studios Architecture, in San Francisco, has devised a shortcut. The firm is remodeling a manufacturing and lab space for Excite, a young, fast-growing Internet company. The architects place frequently updated animations of the space on a private Web site, so the clients can stay current with design progress and offer comments (page 47).

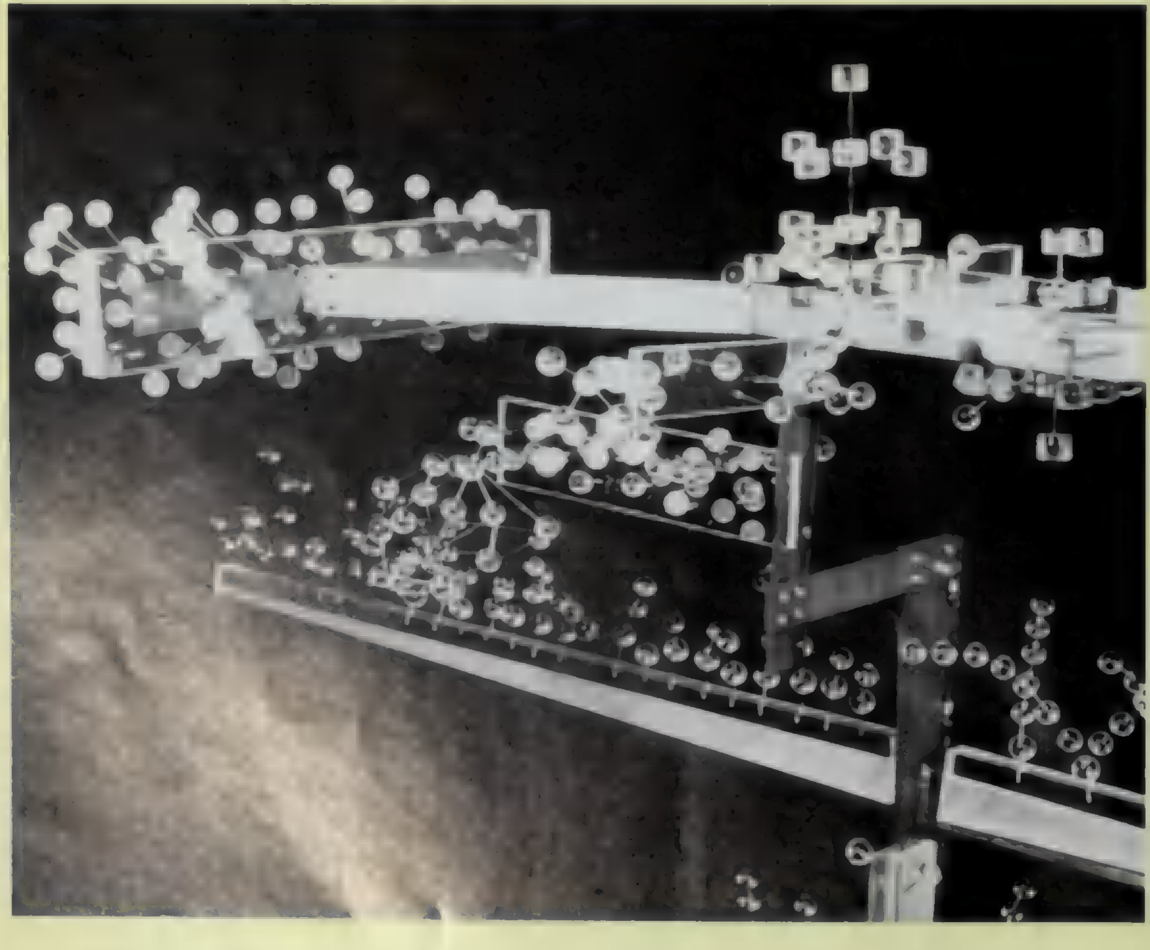
Key to making this work is ArchiCAD, from Graphisoft. ArchiCAD is one of very few CAD systems in widespread use in this country in which designers make the design as a 3D model. Rather than stopping design, moving a 2D CAD project to 3D, then rendering it, the architect can quickly add surfaces and textures to the model and post it.

ArchiCAD supports Apple Computer's QuickTime VR software (which is free from www.apple.com). The owner doesn't need ArchiCAD, but can view the model using QuickTime—moving it around or "walking through" it using only a standard mouse for navigation. According to Studios's designer/systems administrator Bradley Skaggs, these walk-throughs have proved as effective as physical models in helping clients understand the space. What's new is that these animations can be distributed via the Web because Netscape, the most popular Web browser, also supports QuickTime. And because the animations are so easy to create and to post, the architects can give their clients frequent updates. Skaggs's next step is to add a "chat" feature to the firm's Web site so that comments about the design can be published in the form of an ongoing discussion between client and architect.

A virtual design review

At the Human Interface Technology Laboratory at the University of Washington in Seattle, an ambitious project is underway to combine the technologies of the Internet and virtual reality. Led by James Davidson and Dace Campbell, the GreenSpace project studies ways to support the collaborative work of architects who are geographically distant from one another. The researchers seek to simulate the discussions that occur when architects gather to review a design in progress. Such a simulation, they believe, should include multiple views of the design at various scales, audio conversations, and pointing gestures that are visible to other participants. An impression of an immersive environment is created when users wear a headset with stereo viewing monitors. A hand-held device enables users to navigate the "space" in real time and manipulate objects in it. Users have found the sense of being in the space and the ability to move through it very powerful, even with the relatively schematic representation of form and surface rendering available.

Just as important, anyone connected to the site can "meet" in the space. In GreenSpace II, the participants explore three alternatives for a hotel guest room. (These were modeled by students from the university's architecture department—opposite.) Abstract faces are icons that show the location of participants within the space; conversation is augmented by hand icons that can gesture and point. Each virtual room has a work table with small-scale models of all three rooms. With a combination of gestures and voice



New Jersey Institute of Technology students Michael Lisowski and George Paschalis made a model to portray the "architecture" of on-line "rooms" created by participants in a multi-user domain, in this case, a site called MediaMOO. Since it was defined by keyboard, no one knew what it looked like. Originators at MIT's media lab arranged the site to metaphorically echo the layout of their actual Pei Cobb Freed-designed building (top level of model). Users added many more free form "rooms" (lower part of model).

Though the study of emerging on-line domains is still new, Peter Anders sees a new cyber-architecture—complex three-dimensional virtual places best designed by those with architectural skills.

commands, the participants can cut plans and sections from these models for further study.

Although the current system works only on high-powered Unix workstations, Davidson reports that they would like to make their system work on the PCs more common in architectural offices. And although manipulating the environment in real time is still limited, the researchers say their next goal is to enable participants to collaboratively develop and modify the design as they walk through it.

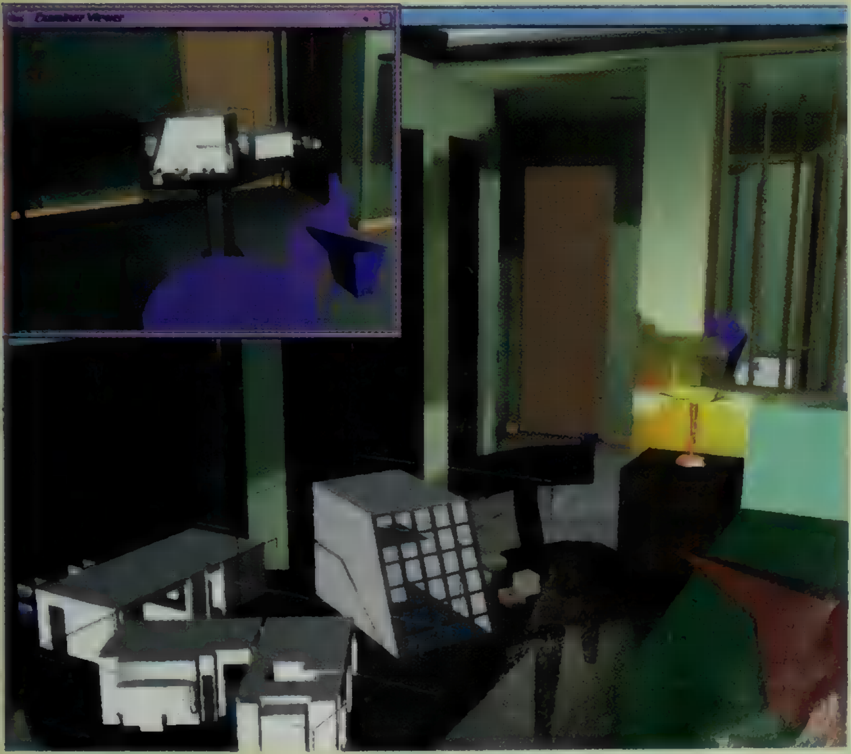
An architecture for cyberspace

Architect Peter Anders wonders whether virtual places, which, after all, have no gravity and therefore no top, bottom, inside or outside, need to confine themselves to metaphors of the physical world. At the New Jersey Institute of Technology in Newark, student researchers working under his direction have been examining this question by researching spatial representations for Internet-based environments called multi-user domains (MUDs). Until recently, MUDs were used primarily for playing games like "Dungeons and Dragons" on-line. Players navigate through a series of game "spaces" by typing commands, such as "N" to move to the next space "north" (as the game defined it). Since such spaces have been arranged through keyboard commands, the relationships among them aren't graphic or spatial, they are verbal and, because navigation rules aren't necessarily obvious, they are ambiguous, even intentionally confusing.

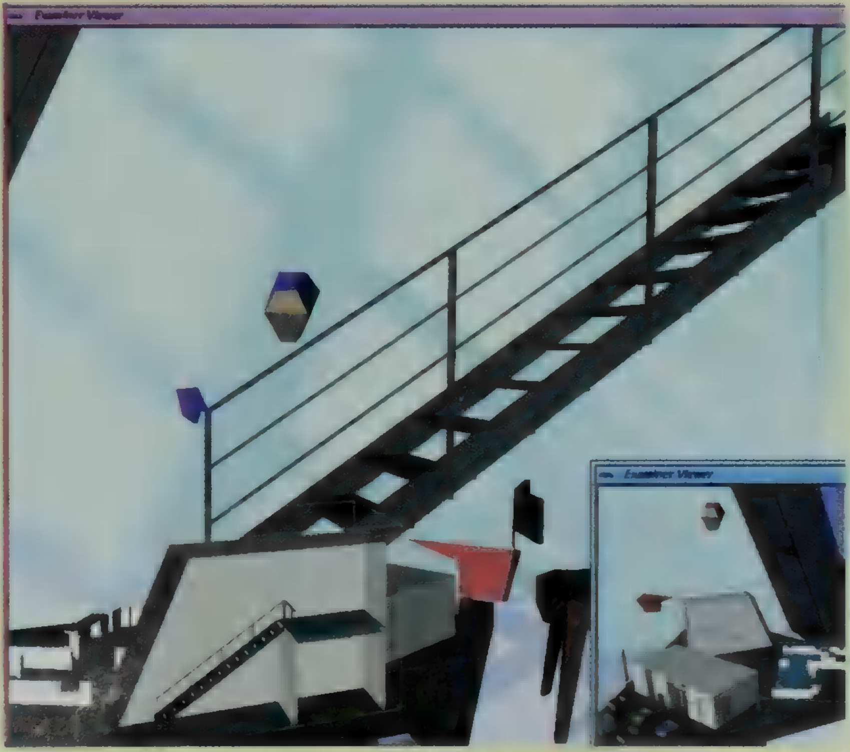
By analyzing how these "spaces" have been made, and creating graphical representations of them (opposite), Anders's group hopes to learn which metaphors that occur in on-line worlds but don't occur in the natural world are useful. How do you replace terms like "north" or "south," for example?

Current MUD users think in terms of rooms and other cues from physical environments and environments inspired by video games ("dungeons"). "Some have constructed their own home towns," he says. But there's no reason to be confined by such metaphors. Anders and his team are trying to figure out what at base is necessary to make such domains useful. They found that MUDs are three dimensional, but that doesn't mean you need to "move" through them. Computer animation techniques—pans, change of viewing angles, and morphing—all prove to be useful graphic ways to denote relative position and movement. Making an object fade, for example, makes it appear to move away.

It is too soon to tell how useful such domains may be one day, but they offer the potential to redefine such common interactions as "meetings." Although this study of the relationship between abstract, graphically simulated, and real space is still in its infancy, Anders notes that what's learned may form a cornerstone of a new cyber-architecture—complex three-dimensional virtual places best designed by those with architectural skills. "This work offers a new area of architectural endeavor," he says. "Because architects are trained in spatial design, community planning, esthetics, graphic communication, and the use of computers, they are in a unique position. As spatial MUDs are created, those skills will be vital to developing a rich cultural setting for future 'mediated' societies." ■



The Human Interface Technology Lab's GreenSpace II project includes virtual rooms that participants can "move" around in. Red "hand" is used to gesture.



Face-like polygons denote the position of participants within the space. The small models on the table can be manipulated. A participant is shown slicing a section.

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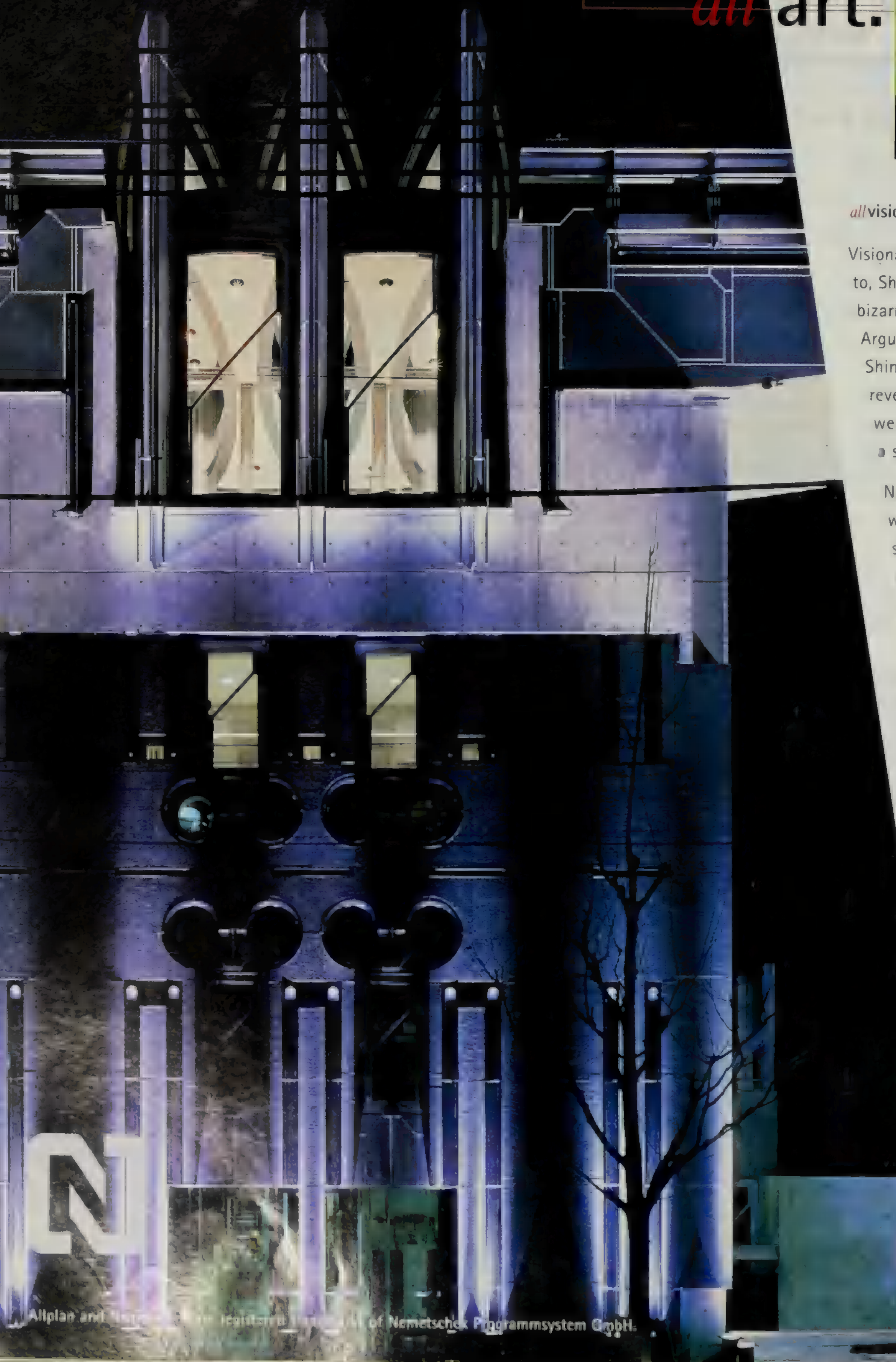

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CAD for Planning—And More

Graphisoft's ArchiCAD 5.0 performs well against the titans, and functions where it counts. It's particularly at home on the Mac.

By Steven S. Ross

This month we look at a major upgrade to ArchiCAD. It comes at a time when Autodesk and Bentley systems have upped the ante in architectural CAD software, with object-oriented databases and lots of available add-ons. Against the titans, ArchiCAD performs well. It has functionality where it counts and it is particularly at home on a Macintosh. AutoCAD's latest versions do not run on the Mac. Bentley's does, but the company is not pushing MicroStation for the Mac.

ArchiCAD, from early in its evolution, has also been a planning tool. Lately the titans have taken that functionality a step further, too. Autodesk has add-on mapping software and the more general database add-on, AutoCAD Data Extension 2.0, reviewed last month [ARCHITECTURAL RECORD, September 1996, page 55]. Bentley has a new GIS-focused add-on, GeoGraphics, which will be reviewed in a future issue.

ArchiCAD 5.0

Vendor: Graphisoft USA, 235 Kansas St., Suite 200, San Francisco, CA 94103, 415/703-9777, 800/344-3468, http://www.graphisoft.com AOL: Graphisoft, cdale@graphisoft.com.
Equipment required: Power Macintosh (strongly recommended) or any 68xxx Mac with math co-processor software, System 7.5, 24MB physical RAM on Power Mac, 16MB on older Macs; 32MB or more strongly recommended. CD-ROM drive strongly recommended. We reviewed on a Power Mac 8100 and on a Quadra 610 with Power Mac card, both with 24MB, and then with 32MB. There is a Windows 95 and NT version as well, for Intel-type CPUs.
Cost: Various pricing schemes. $4,995 buys ArchiCAD itself, PlotMaker (otherwise $295), StairMaker ($95 separately), ArchiSite (otherwise $495) and enhanced support package (otherwise $750). This does not include Atlantis Render, which is $595, or $495 purchased with ArchiCAD.

Version 5.0 adds quite a few goodies to what was already a fine package. Like many of its European cousins, ArchiCAD, out of the box, tries to be a complete solution for designers and drafters. For the Macintosh, it remains the most complete solution. With ArchiCAD, you can rough out a design in a matter of minutes in 2D or 3D, check sun shadows, do hard-line drafting around the rough, add non-graphic data to each element, quick-shade, render, and create a walk-through animation. (The Windows version allows you to play back an animation in QuickTime VR, but not to create one.)

But times change, and Graphisoft is also highlighting "new open business opportunities" for architects and others to develop add-on software for ArchiCAD. Graphisoft distributes a new Software Development Kit that allows independent developers an interface to the underlying ArchiCAD database.

We looked at some of the add-ons: StairMaker 2.5 (the treads and risers are laid in; you add the rest), Atlantis Render (fast, with excellent control of light sources and surface textures), and ArchiSITE (converts contour maps to 3D models that can be rendered and merged with ArchiCAD projects). The modules' tool icons show up right inside the standard ArchiCAD tool palette. The base package comes with QuickTime VR and 3D objects organized by CSI division for $3,795.

Small offices will find ArchiCAD particularly attractive. It can tackle large projects if you need to, and it's easy to use. It can exchange files with AutoCAD, but not perfectly. And this release still isn't meant for networking. It has no file locking or tracking utilities for network use. So it is not an ideal solution for projects that require the same files to be simultaneously accessed and edited by many team members.

Nevertheless, there are many refinements in 5.0. On the database side of the core ArchiCAD package, there's now a "zone" tool you can use to split the design of a building into functional areas—office space, mechanical, and so forth—and sort building elements grouped by zones. Floor areas and volumes calculate automatically by zone as the design evolves. Facilities managers should also find this feature useful.

The database allows new calculations on objects such as the price of footing concrete. ArchiCAD has always been strong in this area, with a fine bill-of-materials database. But in some cases, you had to pull the data into another program such as an Excel spreadsheet to do calculations. Now, you can script the relationship between the height of a steel beam and its weight and bearing area, or between weight and price of an object as well as quantity and price.

Two rendered images in QuickTime VR. You can use the mouse cursor to move intuitively around and over the church (top) and through a building (above).

Work on large projects is easier with 5.0's shared access to multiple object libraries. The libraries can be browsed visually (even in 3D). Both 2D and 3D objects in them can have intelligence—that is, associated data. There are also better links between the database and ArchiCAD's macro language, GDL.

On the drawing side, GDL has new features such as boolean variables and an unlimited number of calculation variables. You can also cut through a 3D image in any plane, and base calculations on the objects the cutting plane encounters.

The cutting-and-calculation process is helped by better ways to edit in elevation or in any number of horizontal sections, rather than only in plan. There's also a new free-form fence (marquee) tool for object selection, along with selection by various criteria such as color, line weight, material, and so forth.

Now drawing tools include splines and Bezier curves that can be transformed into building elements the same way the wall tool can draw a double-line that is actually a wall in 3D. There are also more dimensioning options (cumulative, angular, radial and nominal dimensioning for openings), more line types, and more hatch patterns.

Drafting speed is improved with an "intelligent" cursor akin to those Ashlar and Diehl Graphsoft have built into their CAD programs. It can snap to intersections, tangents, and perpendiculars. There's no direct way to snap to a non-touching intersection point along a non-printing coordinate line as there is in AutoCAD 13, or to snap to a midpoint as there is in Ashlar Vellum, but you can quickly extend lines to "virtual" hotspots in space, then snap to them instead. ArchiCAD is nimble enough—even on a medium-powered Mac—to make this natural, although it takes a few steps.

ArchiCAD 5.0 also adds an "intelligent" Rectangular Column drawing tool that lets columns embed themselves in walls. Curved walls look nicer—with smooth surfaces—and roofs and slabs can follow the curve of wall.

The Roof tool is better—with good control over pitch and type (including domes and vaults). You get up to four changes in slope on a hip roof, and can also draw any overhang, or let the system do it automatically.

Photorealistic rendering now includes texture mapping. There's also that extra-cost add-on, Atlantis Render for ArchiCAD, that does high-quality ray tracing; you can modify the appearance of the final image just by dragging in materials and finishes. It works on the Mac and in Windows 95 or NT, and is ideal for [illegible] interior design. There's [illegible] with Lightscape, for rendering on a Windows NT computer.

ArchiCAD was the first CAD [illegible]—actually, the first non-Apple software, period—to create QuickTime VR animations. With Version 5.0, the controls for such things as lighting and camera angles are totally within ArchiCAD itself. QuickTime files demand relatively low memory and speed from Macs and Windows machines.

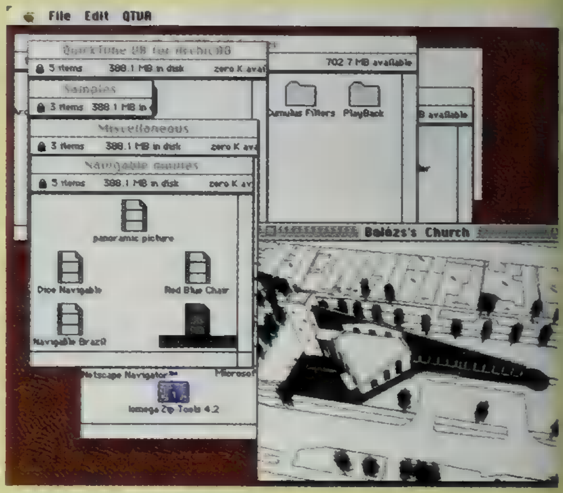
Drawing in ArchiCAD is easy—most of our users rough things out in plan. But each line—for a wall, as an example—has a default height and properties that have been specified or can be changed. Once a floor plan is started, however, you can also edit sections or elevations in Model View; the edits will be reflected in the plan view. You can't create new elements in Model View, only edit existing ones. At any time, you can decouple a view from the model and play with it. Multi-floor buildings can be built a floor at a time, but you can make global changes.

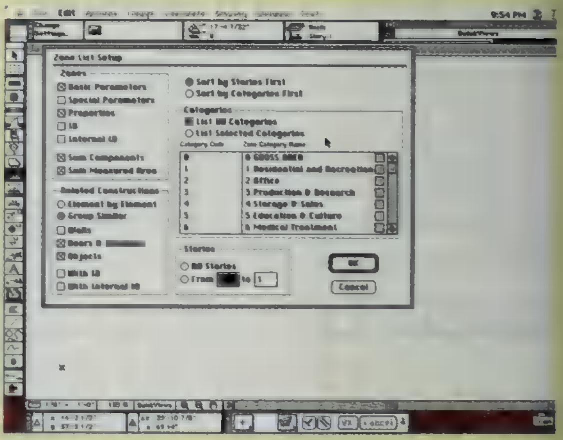
As CAD files have grown to include much non-drawing information, file translation has become rather tricky. AutoCAD DWG and DXF files (including Release 13) can be imported or exported in 2D only, but you can include 3D data in symbols. When ArchiCAD imports an AutoCAD file, it opens a new object directory for each block it sees in the incoming file so that you can edit or preserve blocks one at a time. There are many controls for translation of line styles, type faces, etc.

ArchiCAD files for Windows and Mac handle library symbols in different ways, but translation back and forth is seamless—ArchiCAD on either platform considers files from the other as binary compatible. Merging more than one project file into a single project can be tricky because so much information is involved. ArchiCAD tries to match up floors in an incoming project file with the floor you're working on, for instance. Merging a project containing a building with another containing mainly the site information can also be done.

Manuals: Well-written paperback reference guide, startup guide, GDL reference guide, and separate guide for PlotMaker and for each of the other add-ons. There's no tutorial (a rather good one is available for $29.95 from Graphisoft).

Ease-of-use: As easy as it can be for such a complex package.





Zone List Setup

Zones
☒ Basic Parameters
☐ Special Parameters
☒ Properties
☐ ID
☐ Internal ID
☒ Sum Components
☒ Sum Measured Area

● Sort by Stories First
○ Sort by Categories First

Categories
☒ List All Categories
○ List Selected Categories

Related Constructions
○ Element by Element
● Group Similar
☐ Walls
☒ Doors &
☒ Objects
☐ With ID
☐ With Internal ID

0 GROSS AREA
1 Residential and Recreation
2 Office
3 Production & Research
4 Storage & Sales
5 Education & Culture
6 Medical Treatment

Stories
○ All Stories
○ From to 1

OK
Cancel

Top: Getting ready to add simple hip roof (actually a mansard) to project. Rendered ArchiSITE image at lower right has been merged with the building's project file.

Above: Specifying building-use zones with new 5.0 tools.

Error-trapping: Make sure you've totally surrounded a hole with the free-form fence; otherwise, you may distort the hole if you try to stretch the selected items. There's a good Undo function with unlimited steps. Version 5.0 ships with 4.55 so that you can continue working on a current project in the older version as you upgrade to the newer one for new projects. File formats convert to the newer version automatically. ■

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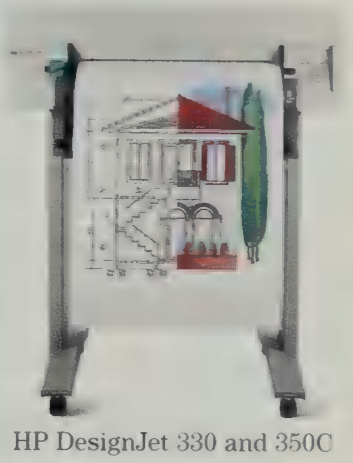

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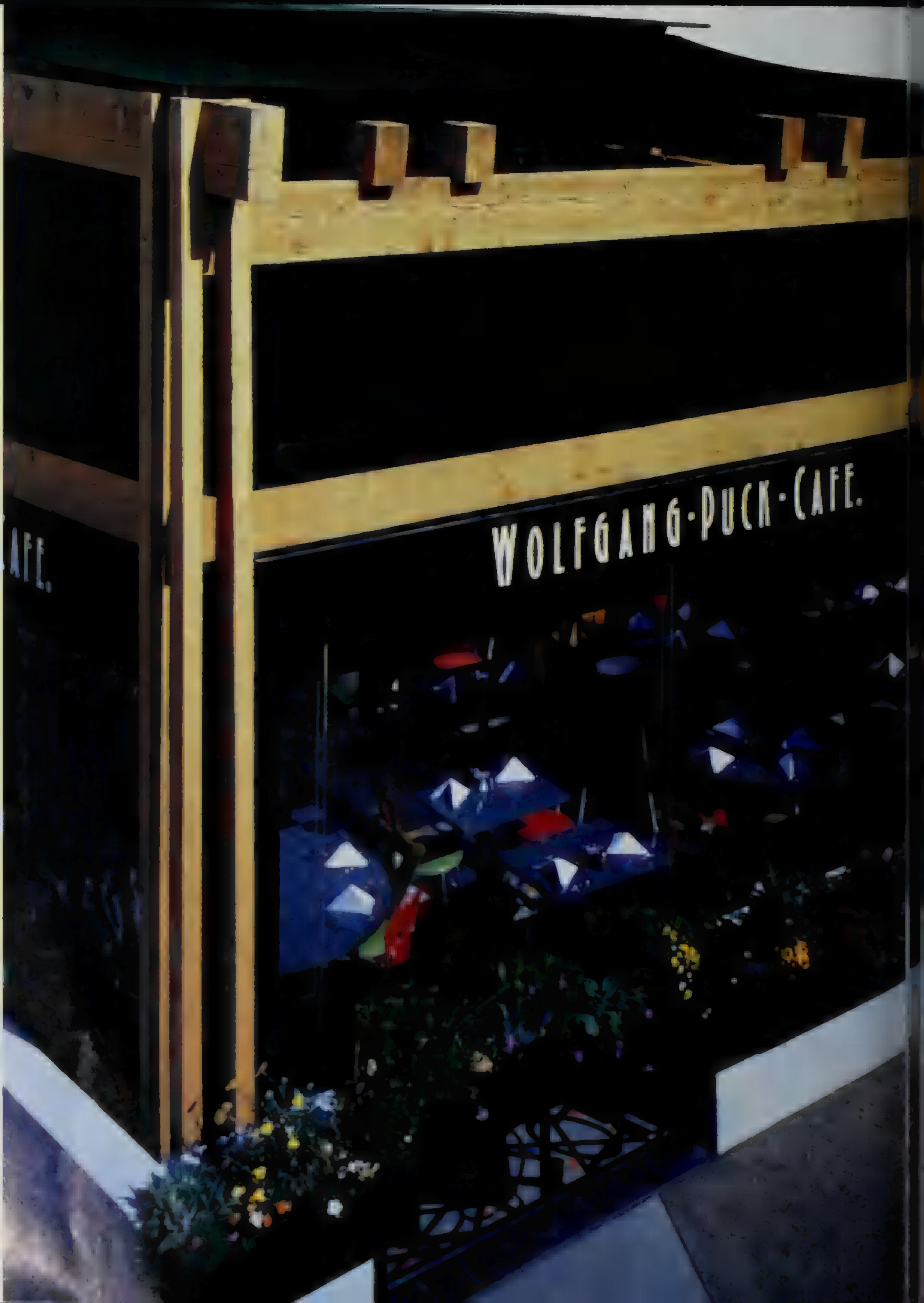
The Wolfgang Puck Cafe's® latest locations are indeed a feast for the eyes. Even before you step inside to see the stunning tile mosaics and the signature chairs, you're greeted by colorful awnings, hanging panels, umbrellas and silk-screened valances made from delectable Sunbrella® fabric.

To set the scene for an explosion of radiant interior colors, award-winning designer Barbara Lazaroff chose bold hues like yellow, red, blue, green and black for exterior use. And she wasn't just drawn to our wide selection of shades. She also knew that our [illegible] solution [illegible] She liked the [illegible] that also makes our fabric [illegible] breathable and energy efficient.



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recognized our excellent reputation for durability which is backed by a five-year limited warranty. The fact is, Sunbrella® solution-dyed acrylic fabrics are perfect for all kinds of commercial applications. And our fabrics not only provide long lasting color, but they also offer superior comfort with their breathable protection from the sun.

On top of all this, they come in a wide variety of solids and stripes. Which means they're certain to satisfy even the most sophisticated tastes.

So check the Yellow Pages under "Awnings and Canopies" for the awning manufacturer or dealer near you and specify Sunbrella, or contact Glen Raven Mills, Inc., Glen Raven, NC 27217.

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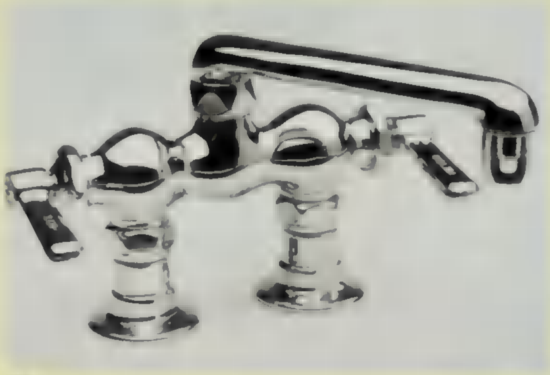
Plumbing Designs Meet New Rules

Water-conservation laws and Americans with Disabilities Act guidelines are having a big impact on what fixtures look like and how they work.

Plumbing news: After January 1997, federal law will prohibit the manufacture of commercial toilets that use more than 1.6 gal. per flush (residential-use models must meet this standard already). Faucets are currently restricted to a water flow of no more than 2.5 gal. per minute. Water-saving rebate programs, such as New York City's toilet giveaway, have demonstrated how effective low-volume toilets are in reducing water use. The Department of Housing and Urban Development estimates that replacing each existing water closet with a 1.6 model would save 70 percent of the water now used annually by households in the U.S. —Joan F. Blatterman

153. Plus ça change...

Commercial plumbingware of yesteryear has been subtly tuned for ADA compliance and re-issued as the Architectural line for residential use. Based on a cartridge valve that closes with (not against) line water pressure, the rugged fittings offer interchangeable spouts, including double-jointed pot-fillers, circa 1954 curves, and goosenecks; foot-pedal controls are an option. 708/803-5000. The Chicago Faucet Co., Des Plaines, Ill.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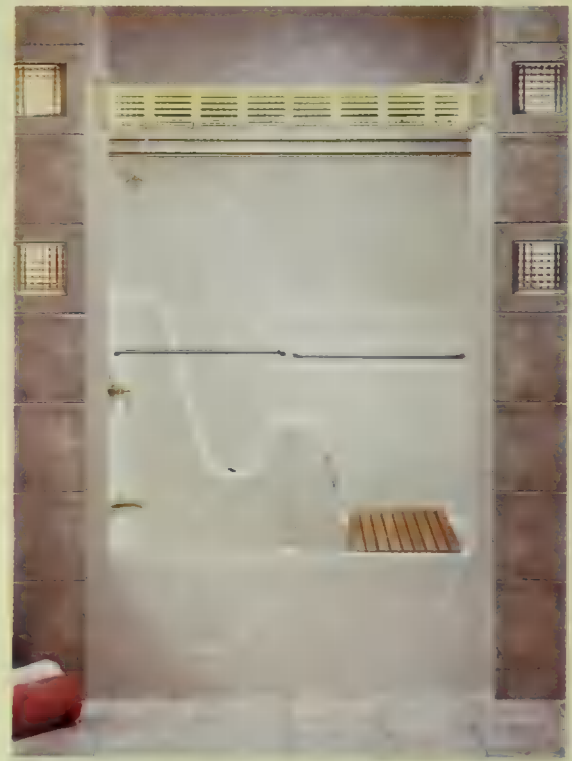
154. Performance-contracting service

Sloan Valve Co., a major supplier of flush valves and assisted-flush plumbing equipment, announced a new water-management service for commercial and institutional facilities. To be called Sloan Hydronics and marketed to building owners and A/E professionals, [illegible] will develop a detailed water-use [illegible] planned or existing [illegible] plan, and enable [illegible] needed technology [illegible] savings. [illegible] Sloan Valve Co., Elk Grove Village, Ill.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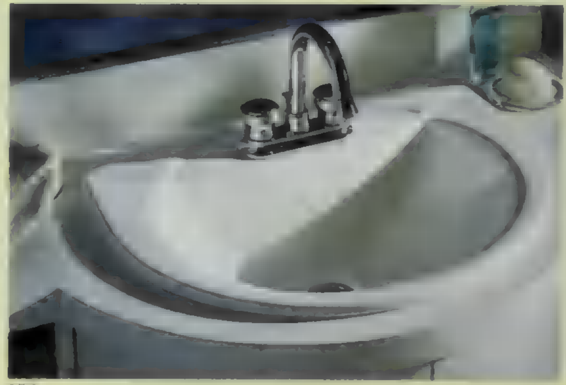
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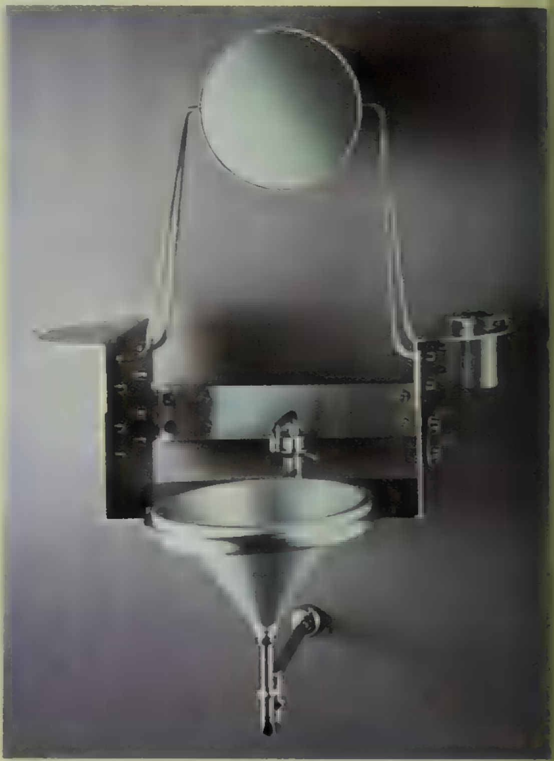
155. One-piece tub/shower/whirlpool

A new design, Status is an extra-deep tub with four massage jets and 80-in.-high enclosure fronted by a frameless (no metal track) shower door. Made of fiberglass, the tub/shower design can be specified gel-coated in any of 24 colors; dimensions are 5-ft long by 36-in. wide. 800/955-0316. Universal-Rundle, New Castle, Pa.

156. Drop-in basin

From Kohler's new Folio Suite, described as offering "simple styling usually found at a much higher price point," this vanity-top lavatory has a sweeping, 25-in.-wide shape not often found in a drop-in configuration. The Folio line also includes a whirlpool bath, pedestal and self-rimming lavatories, and a gravity-flush, low-volume toilet. 414/457-4441. Kohler Co., Kohler, Wis.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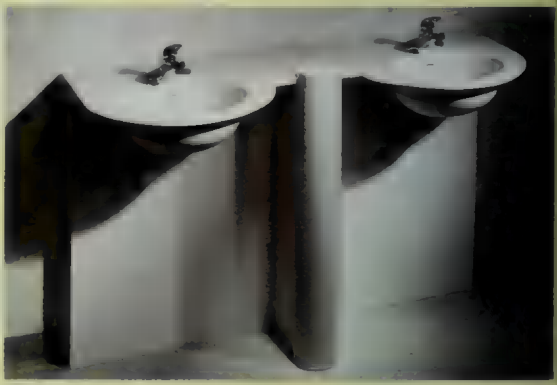
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157. Industrial-tech washbasins

A wall-hung version of Toto's Cera basin style, Multiple lavatories are built on an aluminum framework accented with red, blue, and green shelves, supports, and accessories such as towel holders. Up to three units can be linked together along a wall. 714/282-8686. Toto Kiki USA, Inc., Orange, Calif.

158. Sleek and ADA compliant

Designed to meet ADA wheelchair-clearance and mounting-height requirements in public washrooms without calling attention to that fact, VTA (Vanity Top A) lavatories incorporate universal-design features in a clean-lined unit made of a single piece of Surell solid surfacing. (Sinks are shown without plumbing in photo above.) Units can be "seamlessly" joined for a totally smooth counter. 513/786-3400. Formica Corp., Cincinnati, Ohio.

"Off the Rack" PV Curtain Wall

159-a

159-b

159. Complete low-volume toilet line

American Standard offers water closets that meet the most stringent water-saving regulations, whether for residential or commercial use. The china bowls of these 1.6 toilets have been subtly recontoured to accommodate the different hydraulics and line pressures of the shorter, more-forceful flow generated by assisted-flush tanks. The Heritage residential toilet (a) incorporates a Flushmate pressurized-air tank in its low-profile design. While somewhat louder in operation than gravity models, the assisted-flush toilets work in only 3 seconds, and tank refill is silent and nearly instantaneous. In commercial products (b), where high performance is vital, the low-flow water-pressure flush technology permits a simplified drain configuration, making them almost jam-proof. 908/980-3000. American Standard, Inc., Piscataway, N.J. ■

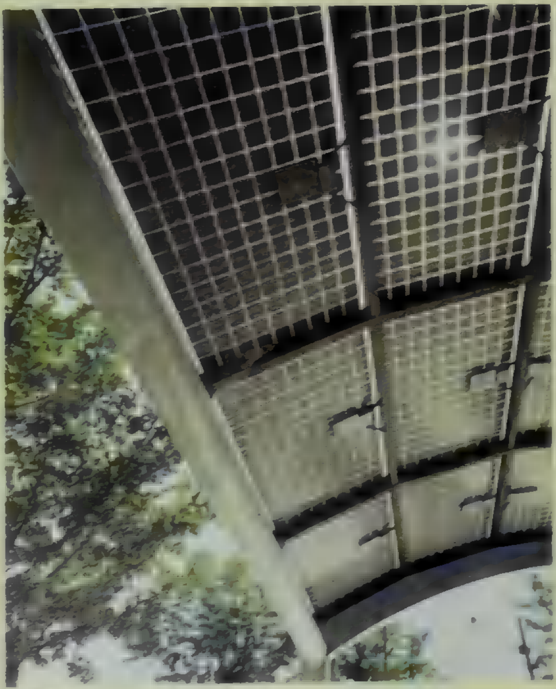
160. Double-duty

Kawneer's new 1600 PowerWall is described as the first fully tested and integrated photovoltaic curtain-wall system. Developed with Maryland-based Solarex Corporation, a manufacturer of both polycrystalline and thin-film types of solar cells, PV modules can produce enough electrical energy—up to 240 watts each—to substantially lower utility bills. Consisting of polycrystalline cells, PowerWall panels are available in standard infill dimensions. At 1/4-in. thick, they are thin enough to fit within a standard glazing bite. The lightly textured sun-side surface is blue; a clear Tedlar backing applied to the inboard surface (a) gives that side a gray appearance—and allows the panels to meet the ANSI 97.1 safety-glazing standard.

Incorporated into the 1600 inside- or outside-glazed framing system (b), the PV modules meet all other ANSI, ASTM, and AAMA building-envelope tests for static and dynamic wind loading and air and water infiltration, as well as Uniform Building Code 2334 H.2 for seismic performance. Photovoltaic panels can be retrofit into existing spandrel systems, and blank panels can be produced to mimic the operating modules for a uniform-appearing facade.

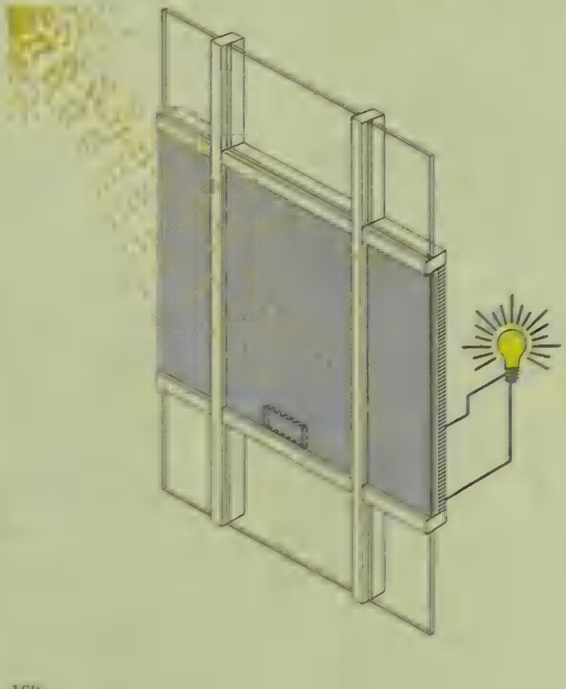
The installed cost of a PV curtain wall should be considered in the context of the cladding material it preempts, whether stone, spandrel glass, or metal panels. Life-cycle costs must also reflect the dollar value of the electricity generated (which will depend on the size, solar orientation, and latitude of the installation), and should factor in a certain amount of environmental good will.

Curtain wall provides DC output power generation. Each module can have its own AC inverter (indicated in drawing, c), and generates usable electricity independently. Current can be fed directly into a building's system, and can significantly offset the watts per sq ft draw of a facility. 770/449-5555. Kawneer Company, Inc., Norcross, Ga. ■



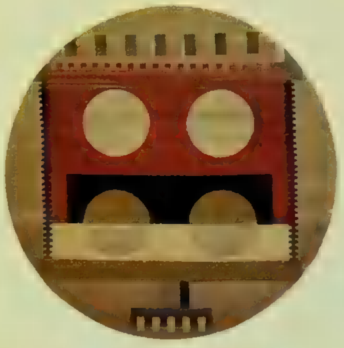
160a

160b



160c

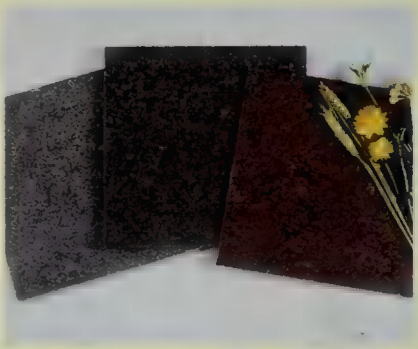
161. Custom-color vent louvers
The New Concept gable vent can be ordered in PVC or metal in any of 400 baked-enamel finish colors. Less costly than extruded-aluminum units, vents are designed for flush mounting in vinyl-sided, stucco, brick, or other exteriors. Custom-size and -shape louvers, such as this Gothic arch for a church renovation, are a specialty. 800/635-6448. New Concept Louvers, Inc., Springville, Utah.



162. Rugs for special spaces
Scotland-born and Milan-trained architect David Shaw Nicholls has turned his hand to flat-weave and tufted-pile specialty rugs. From his Cosmo Cities collection, an unusual round, double-sided "super Kelim" comes in diameters up to 12 ft; the 10-ft size costs about $3,850. A stitched outline detail gives a three-dimensional quality. 212/388-1000. David Shaw Nicholls Corp., New York City.

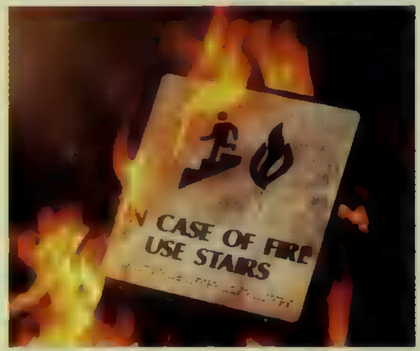
163. Conservatory addition
Room-sized glazed structures based on classic English garden rooms are made with hardwood framing, insulating safety glass, and triple-wall-polycarbonate roof panels. Units can be as small as a vestibule or as large as a full-size family room. Meets U.S. codes for snow- and wind-loading. Modular approach is said to lower installed cost. 800/963-8700. Hartford Conservatories, Woburn, Mass.

164. Flame-resistant fabric
Jewel non-translucent glass-yarn textiles are pigment-dyed, and do not need an interliner to prevent show-through, even over hard-to-hide-yellow substrates. When used as a cover for acoustical panels, as shown in this bank installation, fabrics meet or exceed U.S., German, Canadian, and British flammability and toxicity standards. 800/438-7465. Land Fabrics, Island Park, N.Y.

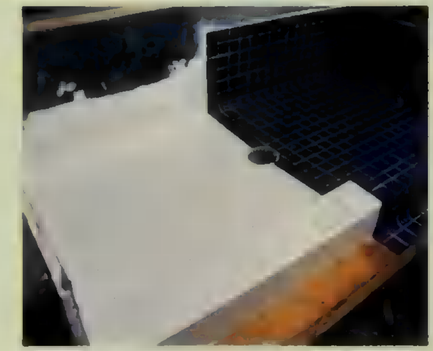


165. Agglomerate stone counter
Made in Canada using high-pressure cast-stone technology, Granirex offers consistent coloration and large slab sizes (up to 4 by 10 ft, 3/4-in. thick). Three new shades—red and brown Hearthstone and Classic Mahogany—bring the standard color range up to 20. Also comes in a 3/8-in. thick tile format that withstands the heaviest traffic. Samples: 773/471-0700. Terrazzo & Marble, Chicago.

166. Cast cabinet hardware
Larger than most knobs and pulls, new "architecturally detailed" hardware line includes a curved bail drawer pull and a matching door knob, shown here in Regency Brass finish, as well as straight pulls and oblong and square knobs. Mounting-screw placement accommodates either 3-in. or 96-mm spacing. Catalog: 815/969-6308. Amerock Corp., Rockford, Ill.



167. "Indestructible" signs
Kroy's ADA 300 signage line is said to combine a high level of durability with graphic and design flexibility. Made by a new process that integrates text, graphics, Grade II Braille, and color details on one piece of Micarta fire-labeled laminate, signage is suggested for heavy-use sites such as schools, hospitals, and factories. 800/733-5769. Kroy, Inc., Scottsdale, Ariz.



168. "Leak-proof" shower pan
Made of flame-retardant Noryl resin, the Tile-Redi pan liner will take ceramic or marble tile directly, using standard thin-set mortar. Moisture-resistant tile-backer board meets flush with the top of the 1/2-in.-wide preformed curb. Pan is sloped to drain; outlet height can be adjusted to tile thickness. 888/445-TILE. Tile-Redi, Pompano Beach, Fla. ■

Short Takes

If it's not too late...
Prepared for people living in areas susceptible to wildfire, the Firewise Home Page has a landscaping checklist—what to plant and where to put it—and an informational section on protecting your home from wildfire: www.firewise.org (Web page); 937/237-1085 (phone). Co-sponsored by the National Fire Protection Association, the U.S. Fire Administration, and the Forest Service.

Hazardous window treatments.
The New York Times reports that the Consumer Products Safety Commission (CPSC) has issued a warning against vinyl mini-blinds imported from China, Taiwan, Indonesia, and Mexico. Often made with lead as a binding agent, the plastic in these blinds tends to deteriorate in sunlight and release the lead into the dust on the slats. American blinds contain no lead, and reformulated imports will be so labeled. The safety group also points out the possible fire hazard offered by popular torchière-style halogen lamps. These light sources are known to develop an in-use temperature hot enough to ignite curtains or other combustible material placed in contact with bulb or shade; at least 30 fires have been associated with halogen pole lights so far, according to the CPSC. ■

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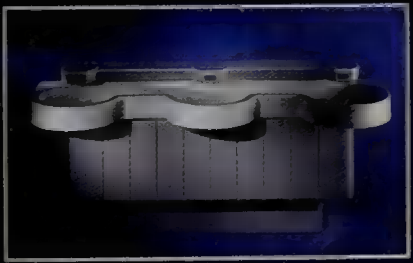

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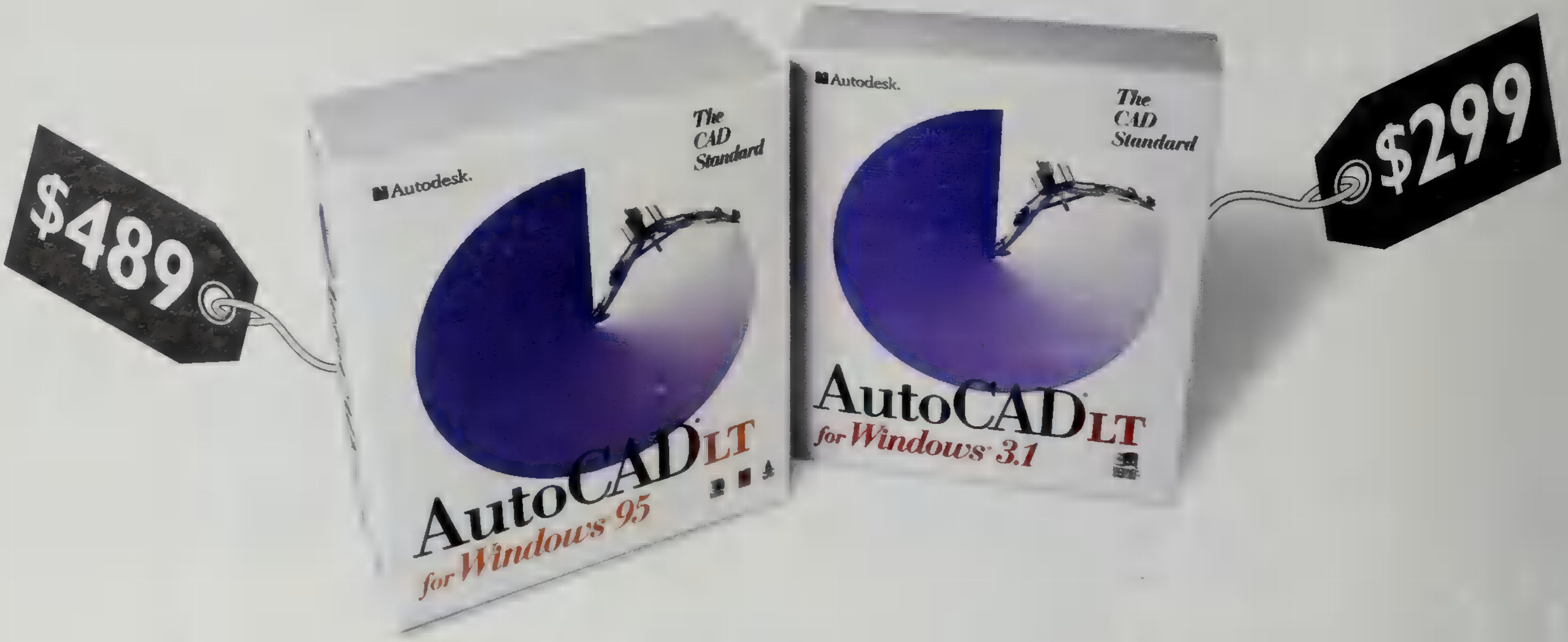

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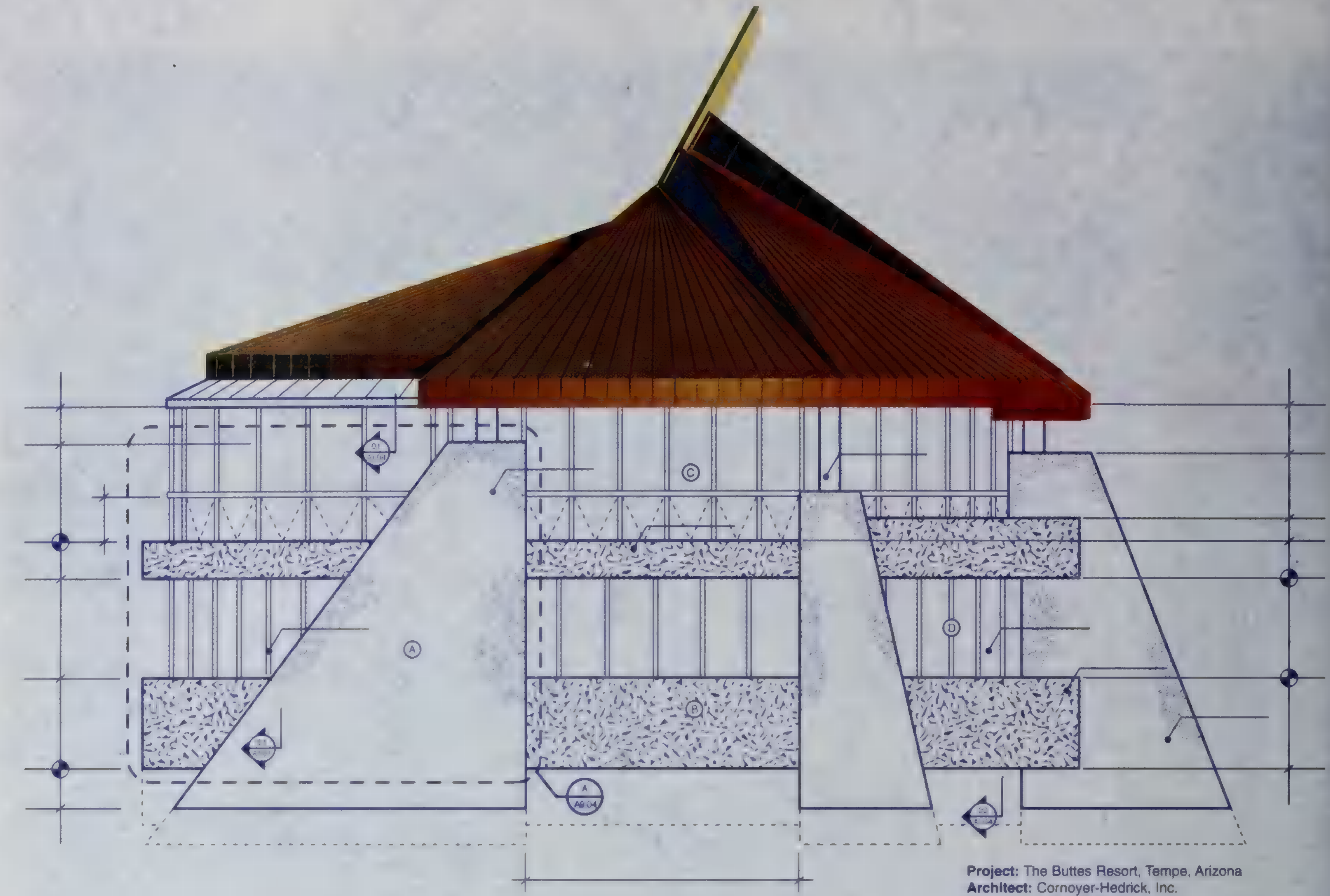

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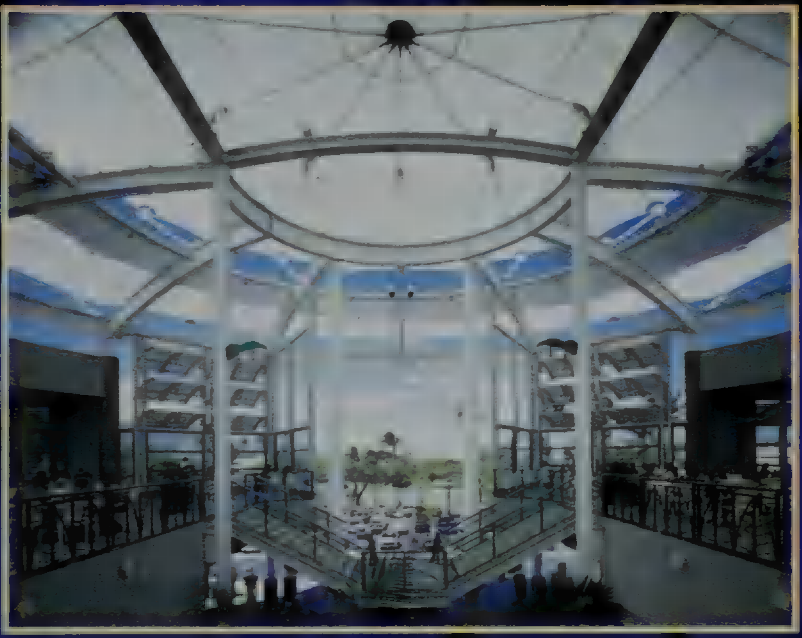

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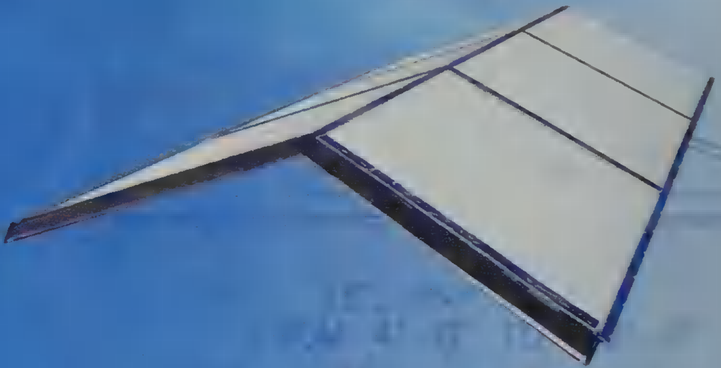

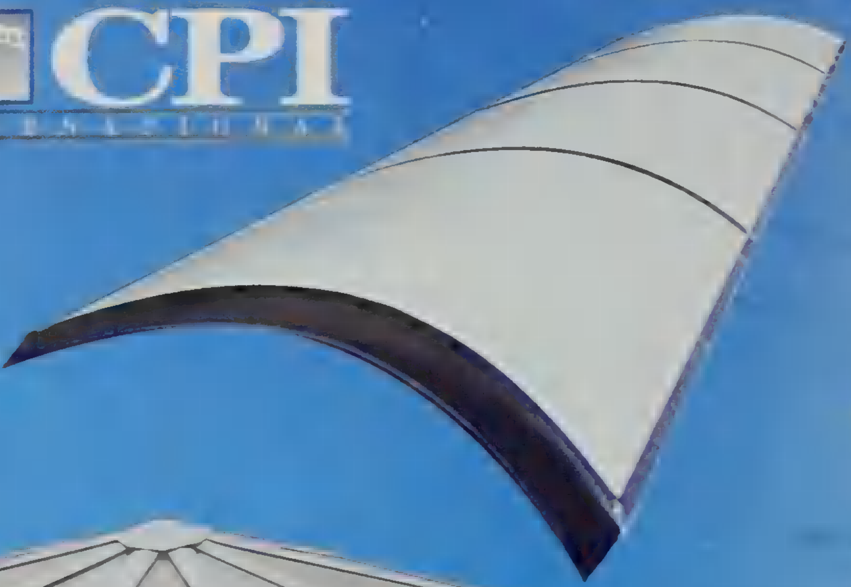

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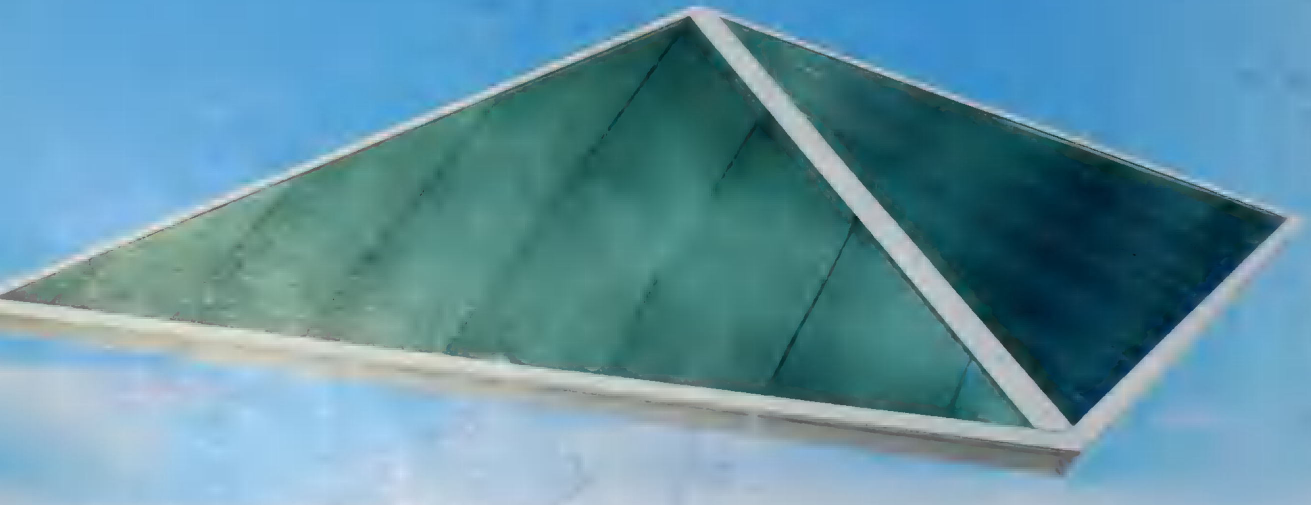

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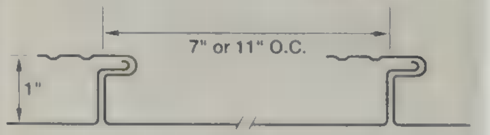

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Roofing Contractor: Metal Building Specialties
Color: Sandstone
Profile: Flush Panel

Rubenzer Residence
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Architect: Bruce Lehrer Architect
Roofing Contractor: D.H. Nygren/ Specialty Systems
Color: Stone White.
Profile: Flush Panel

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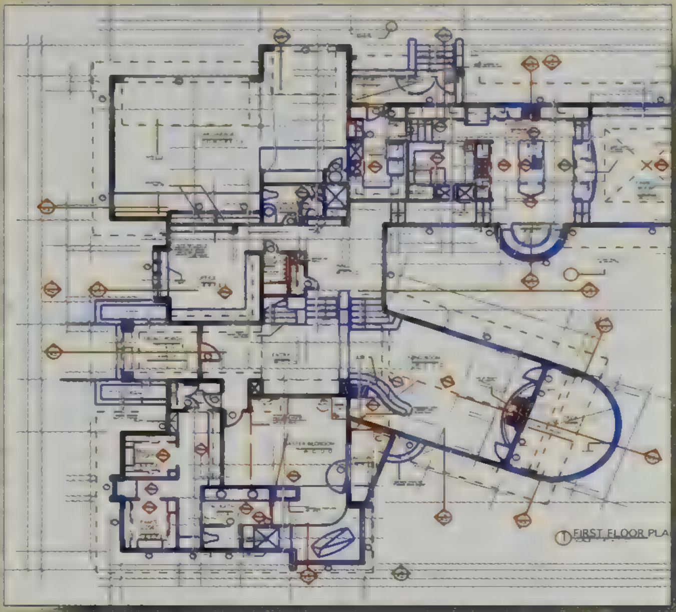
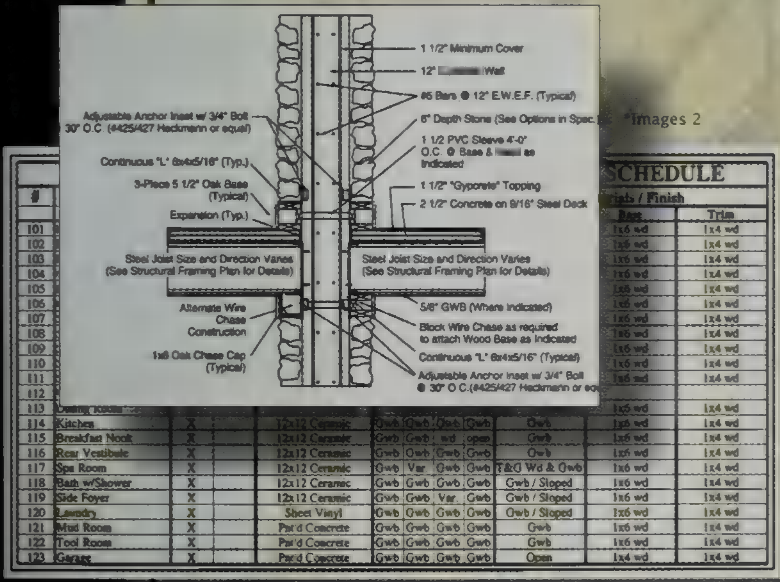


*image 1


1 1/2" Minimum Cover
12" [redacted] Wall
#5 Bars @ 12" E.W.E.F. (Typical)
6" Depth Stone (See Options in Spec.
Adjustable Anchor Inset w/ 3/4" Bolt 30" O.C. (#425/427 Heckmann or equal)
1 1/2 PVC Sleeve 4'-0" O.C. @ Base & [redacted] as Indicated
Continuous "L" 6x4x5/16" (Typ.)
3-Piece 5 1/2" Oak Base (Typical)
1 1/2" "Gyporete" Topping
Expansion (Typ.)
2 1/2" Concrete on 9/16" Steel Deck
Steel Joist Size and Direction Varies (See Structural Framing Plan for Details)
Steel Joist Size and Direction Varies (See Structural Framing Plan for Details)
Alternate Wire Chase Construction
5/8" GWB (Where Indicated)
Block Wire Chase as required to attach Wood Base as Indicated
1x6 Oak Chase Cap (Typical)
Continuous "L" 6x4x5/16" (Typical)
Adjustable Anchor Inset w/ 3/4" Bolt @ 30" O.C. (#425/427 Heckmann or eq

*images 2

SCHEDULE

#										Base	Trim
101										1x6 wd	1x4 wd
102										1x6 wd	1x4 wd
103										1x6 wd	1x4 wd
104										1x6 wd	1x4 wd
105										1x6 wd	1x4 wd
106										1x6 wd	1x4 wd
107										1x6 wd	1x4 wd
108										1x6 wd	1x4 wd
109										1x6 wd	1x4 wd
110										1x6 wd	1x4 wd
111										1x6 wd	1x4 wd
112											
113										1x6 wd	1x4 wd
114	Kitchen	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
115	Breakfast Nook	X		12x12 Ceramic	Gwb	Gwb	wd	open	Gwb	1x6 wd	1x4 wd
116	Rear Vestibule	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
117	Spa Room	X		12x12 Ceramic	Gwb	Var.	Gwb	Gwb	T&G Wd & Gwb	1x6 wd	1x4 wd
118	Bath w/Shower	X		12x12 Ceramic	Gwb	Gwb	Gwb	Gwb	Gwb / Sloped	1x6 wd	1x4 wd
119	Side Foyer	X		12x12 Ceramic	Gwb	Gwb	Var.	Gwb	Gwb / Sloped	1x6 wd	1x4 wd
120	Laundry	X		Sheet Vinyl	Gwb	Gwb	Gwb	Gwb	Gwb / Sloped	1x6 wd	1x4 wd
121	Mud Room	X		Pnt'd Concrete	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
122	Tool Room	X		Pnt'd Concrete	Gwb	Gwb	Gwb	Gwb	Gwb	1x6 wd	1x4 wd
123	Garage	X		Pnt'd Concrete	Gwb	Gwb	Gwb	Gwb	Open	1x4 wd	1x4 wd

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Charles Perrygo
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Swales and Associates, Inc.

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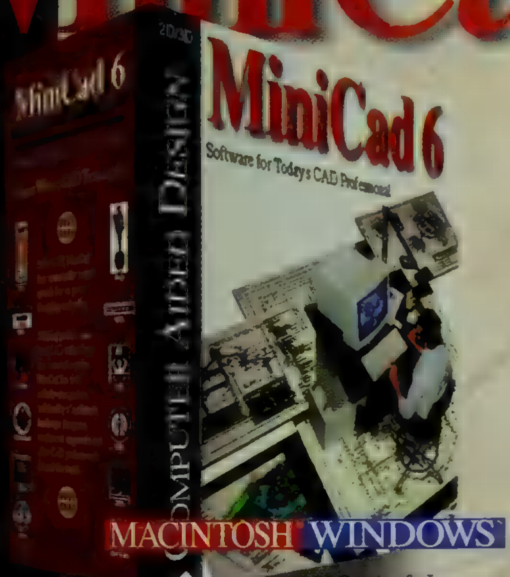

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*Image 1 · Courtesy of Francois Levy, Dick Clark Architects, Austin, TX
*Images 2 · Courtesy of Cameron Lacy, DCL Architects, Wayne, PA
*Image 3 · Courtesy of David Brunke, Herring [redacted] Trowbridge Architects, Herndon, VA

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Powerful Forms for a Hard-Working Town

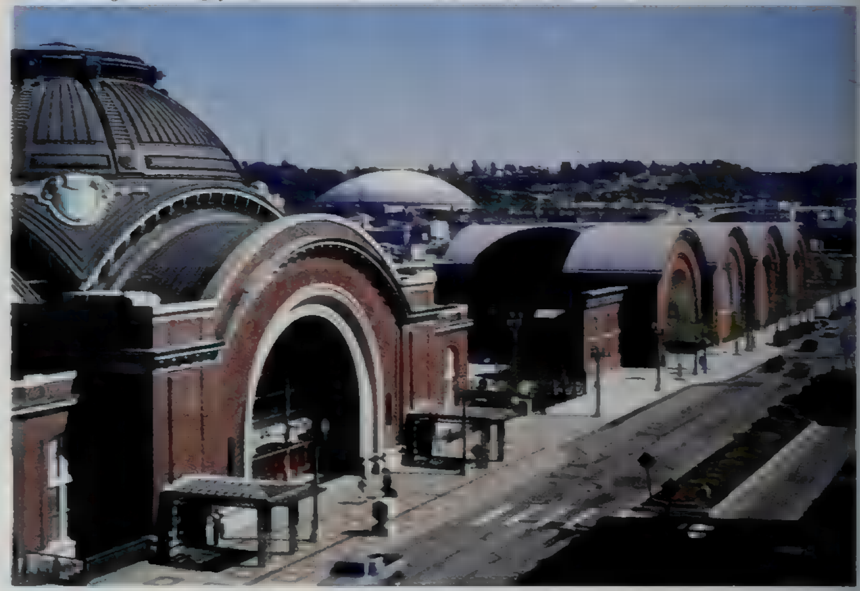
A major new building, the Washington State History Museum, is helping revitalize downtown Tacoma. How the project was conceived, designed, and built offers lessons for architects.

The Washington State History Museum helps complete Tacoma's urban puzzle. This major museum set in a small, working-class city fits alongside its neighbor, Tacoma's historic Union Station, like a long-lost, equal wing. How the project came to be built there reveals a great deal about the complex process of making architecture: the nature of contemporary architectural practice, of competitions, of great names and unknowns, how joint ventures work, the vital role of a good client and the advantages of vision and civic will.

The story begins with Tacoma, a muscular city of paper mills, cranes, and docks. The nation's sixth busiest port boasts a proud history: Tacoma had been the terminus of one of the transcontinental railroad's main lines, the Northern Pacific, in 1873. Formerly Seattle's competitor in population and prosperity, this community of 180,000 people lagged in the shadow of Mt. Rainier as Seattle blasted skyward into aero/cyberspace. Cut off from the waterfront by train tracks, highways, and decrepit warehouses, her depot abandoned by AMTRAK in 1985, her downtown languishing, Tacoma needed a boost. Its leaders sought a renewed identity for the city. The adaptive re-use of the depot came first.

Tacoma's finest historic building, a railroad depot called Union Station, was a local architectural icon. The copper-domed Beaux-Arts building boasted strong form and strong parentage—designed in 1911 by Reed and Stem, the architectural firm that planned the heart of New York City's Grand Central Station. Renovated and enlarged in 1991 with a low-scaled addition for the federal court's Ninth Judicial District, the renovated depot served as the initial catalyst for the revitalization of Tacoma's historic warehouse district. Plans were formulated for two other significant changes, including the renovation of warehouses into a new campus for the University of Washington and a new state history museum. Tacoma's downtown was changing.

© Timothy Hursley photos



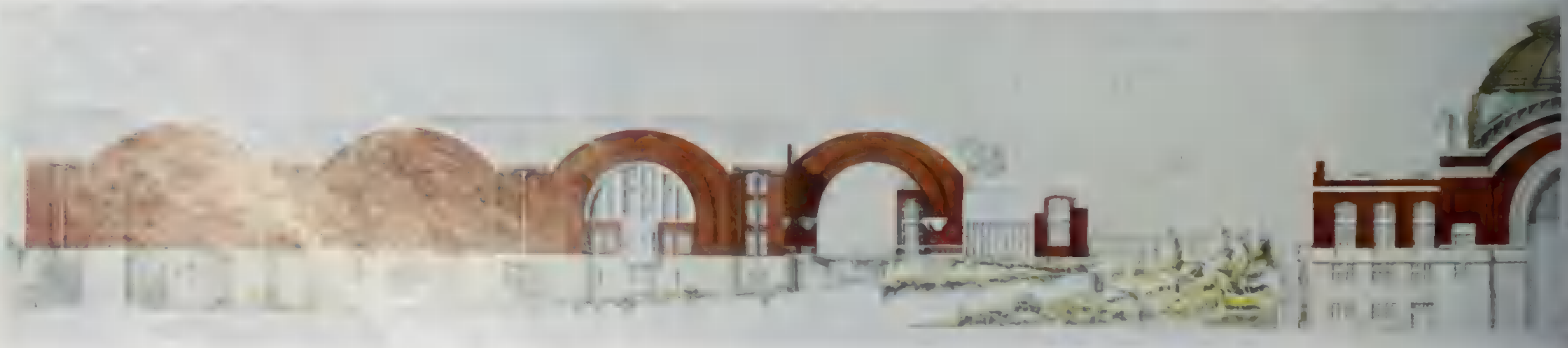
The four arches of the new museum (above far right) line Tacoma's Pacific Avenue, and mirror Union Station's forms (above left).

Enter the client. The Washington State Historical Society, housed in inadequate quarters in Tacoma, sought a new museum. In a critical decision, the board of directors and the museum director, David Nicandri, determined to hold an international competition to select an architectural firm. The organization was committed to exceed local or even regional expectations. "We had to break the paradigm," he says. "Otherwise the museum would have been designed and funded with only local significance."

Washington's Department of General Administration and the Historical Society's board selected Bruno Freschi, dean of the School of Architecture and Planning at SUNY Buffalo, to assist with the competition as professional advisor. No stranger, Freschi had been helping Tacoma forge a new vision for the city, particularly along the waterfront. Freschi's international contacts and his experience with competitions helped convince the board to aim high. "I tried to position this for Tacoma's next century."

Brick walls sit over a concrete base in Moore Andersson Architects' new museum.

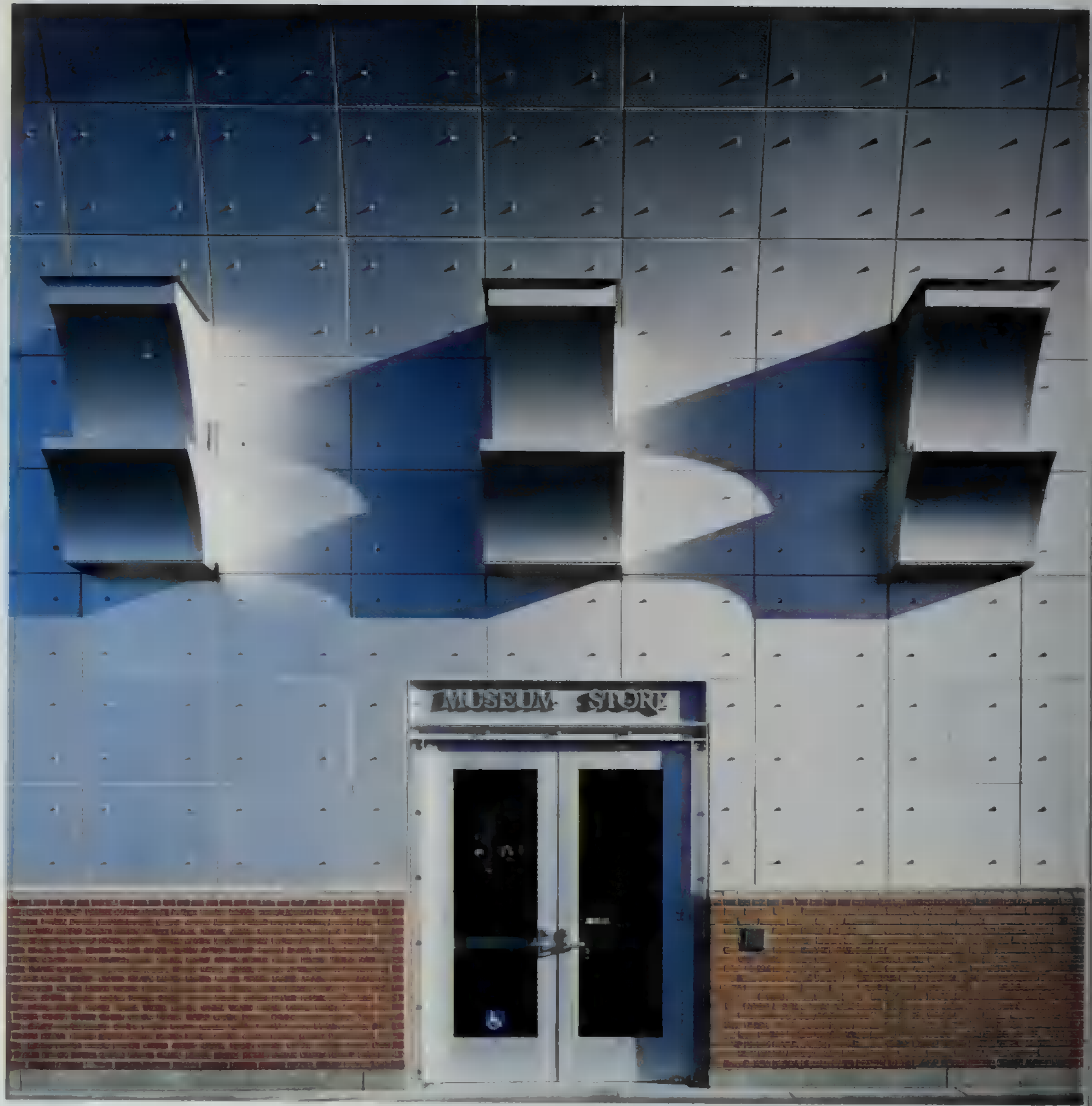
Visitors enter the Washington State History Museum (opposite) through a grand arch.



© Moore Andersson Architects

Washington State History Museum
Tacoma, Washington
Moore/Andersson Architects

Polished aluminum panels with custom hex nuts line the undersides of arches (right). Masonry arches (opposite right) exhibit corbelling and spring from metal brackets. Lead-coated copper fascias mimic curved forms, although they are actually constructed from segmented, straight pieces. Large aluminum-framed, paned windows bring light into the main lobby, and scale to the building entrance.



After a program was devised by the San Francisco firm of Robinson Mills + Williams, Freschi helped structure a competition. All Washington architects could submit; 48 others with special qualifications were invited. Thirty architects from 11 states and 6 countries responded. The Society's board of trustees narrowed the list to four finalists, each of whom received $35,000 to produce a conceptual design: Moore/Andersson from Austin, Texas; Vancouver and Los Angeles architect Arthur Erickson; Michael Graves from Princeton, New Jersey; and Hammond Beeby and Babka from Chicago.

Winner includes an outdoor amphitheater

The seven-person jury, chaired by former Governor Daniel J. Evans, included architects, architectural critics, and prominent Washingtonians. After reviewing schemes that ranged from an evocation of the Pacific Northwest (Graves) to a nostalgic interpretation of historic national park hotels (Beeby), the jury unanimously selected Charles Moore's and Arthur Andersson's winning submission on May 4, 1991.

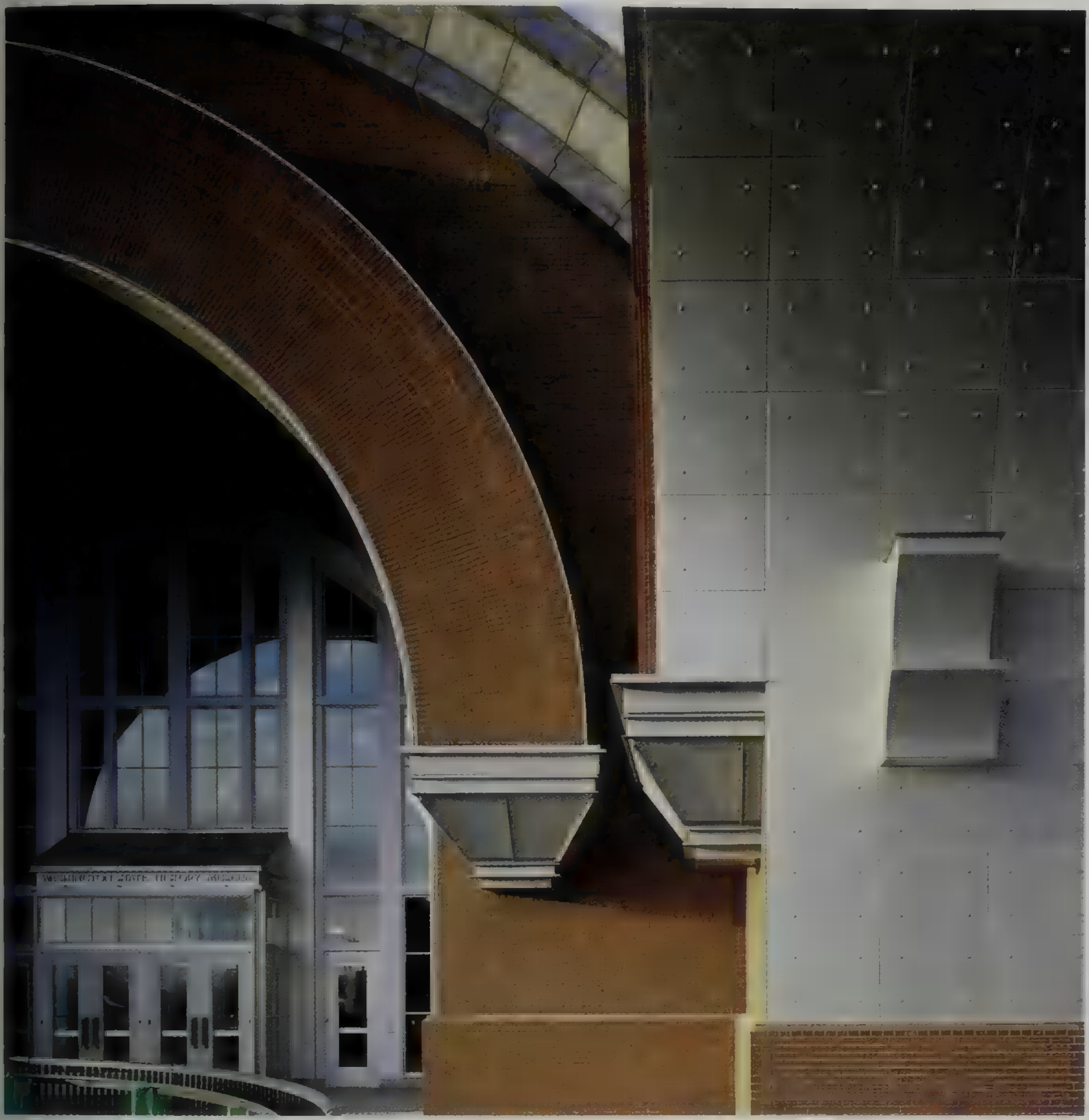
[illegible] who was a board member of the historical society and [illegible] former preservation officer, lauds the architect's solution [illegible] "They were all interesting, but they did not [illegible] of the city" (as the Moore/Andersson scheme did). [illegible] that the team borrowed the "brick and forms [illegible] metal roof that mirrors Union Station, but [illegible] Union Station."

"We [illegible] station," says Andersson.

Moore/Andersson composed a simple palette of materials, primarily brick and concrete, markedly less ornate or embellished than Union Station's. The winning scheme offered one amenity its competitors did not—an outdoor amphitheater, a large urban space that was to become the project's "gift to the city."

The competition forced the architects to address fundamental questions up-front. The height of the building became an early issue. Nicandri reports that rather than set the history museum at the lower height of the court's new wing, the determination was made to allow the museum to mirror the scale of warehouses across Pacific Avenue. Another fundamental understanding was "separating off and opening up" the building from the depot. Rather than connect the museum with the depot at the concourse level, 88 feet of landscaped hillside clearly separate the two buildings.

Andersson mentions the "materiality" of the museum, a quality that he attributes in part to early conversations with Freschi. Both interior and exterior are detailed with an eye for brick's ability to arch, for concrete's plastic qualities, and for its pliancy in mass and form. Undersides of exterior arches are covered in aluminum panels, a material that adds luster to dark recesses. Moore's initial suggestion, by contrast, was for small-scale, gold ceramic tile to underscore the arches, a decision which would have lessened their mass.
Inside, the program called for over 100,000 sq ft of exhibit, storage, administrative, and public spaces. The permanent exhibit alone, described in the program as "the great survey exhibition of the



Moore's Last Project?

The Washington State History Museum can claim to be Charles Moore's last project. Moore died in 1993, ten days after the ground-breaking. Partner Arthur Andersson, who had worked with Moore since 1981, described his mentor's contribution: "Charles had a single- handed ability to design that was astonishing. His idea bank was phenomenal and was intact through his 80's. His role, while very critical, was more than lines on paper. His conversations with us were about what the lobby would be like: spaces that were like Piranesi's etchings. Without his energy and guidance we would not have won the competition." Through Moore's Los Angeles office, his influence on the revitalization of Tacoma will continue: Moore Ruble Yudell has been the leading architectural firm in the development of the University of Washington's Tacoma campus.

history of the State of Washington," demanded clear spans across much of the 20,000 sq ft exhibit gallery, a requirement that forced the architects to consider concrete vaulting. Freschi believes that the competition yielded an additional benefit by preparing the board to become knowledgeable and conversant with the issues they would face as the project moved toward construction.

Architects face a 25 percent cut in funds

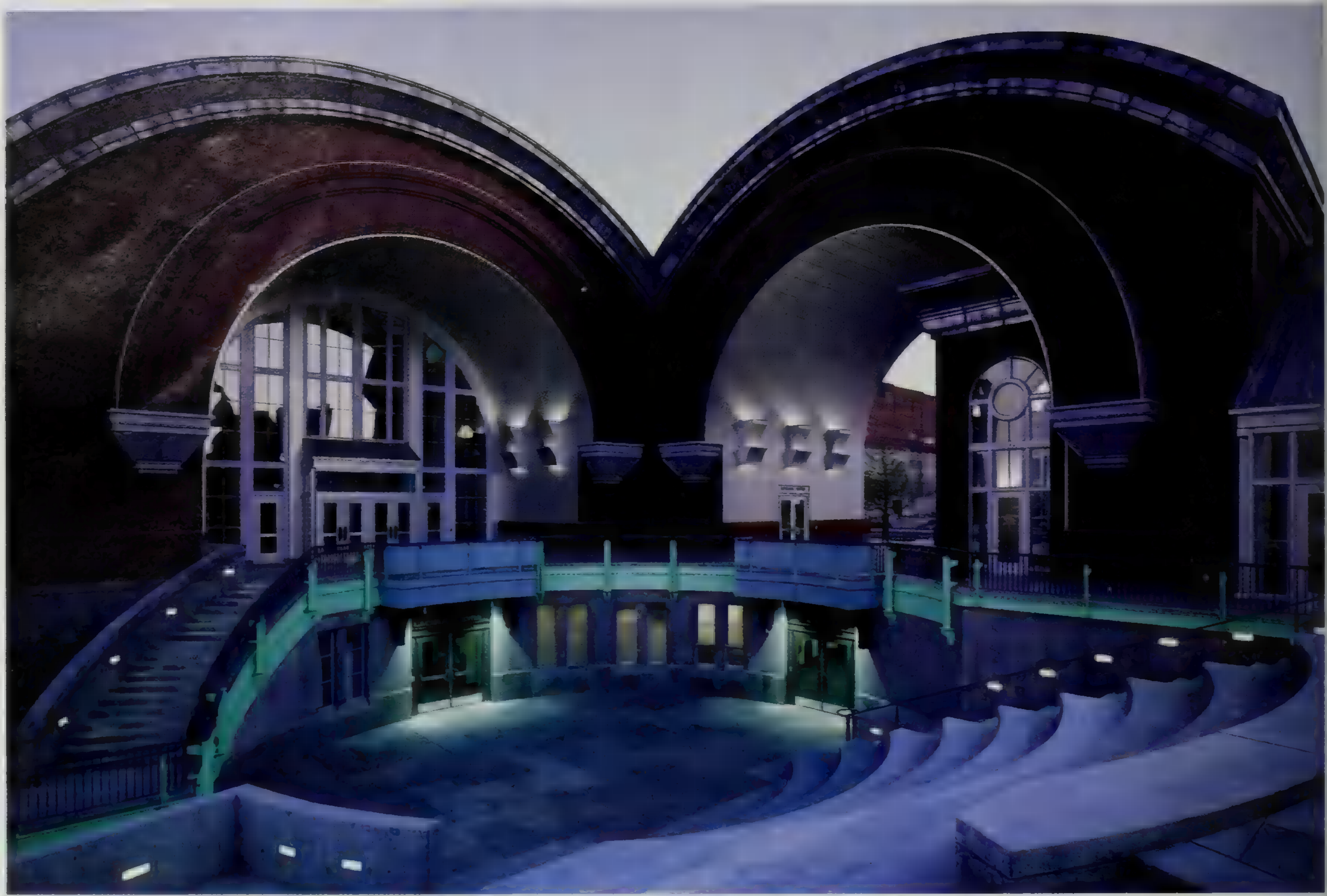
Overseeing the process throughout, formally conducting selections and bidding, and representing the client-agency at the state level was James Copland, a senior architect with the State of Washington. His role as project manager for the state, as he describes it, was to "see that all parties were represented fairly to protect the process and educate the client." Most projects that fail, he thinks, can be traced to inadequately prepared or informed owners.

An immediate concern owners and architects faced was a 25 percent reduction in total funding. Upon notification that they had won, Moore and Andersson were immediately informed that an underground parking garage, a component of the design, had been eliminated with a stroke, and that other alterations would be required. Moore, unfazed by the cuts, declared that less money often produces better results.

Another crucial requirement was securing an associate architect for the team. Copland helped serve as broker, introducing the Texas team to Olson Sundberg, Seattle architects who had just completed work on the Seattle Art Museum. Their experience with architect Robert Venturi served as "an eight-year master class" in architecture, according to Rick Sundberg. Olson Sundberg had developed a reputation for craft, care, and skill in how things are put together. Unlike Moore/Andersson's six-person office, Olson Sundberg's 18-person office relied on the computer. The match was made when Moore walked into the firm's office, surveyed their careful detailing and finish work, and declared, "O.K., now we can get going here."

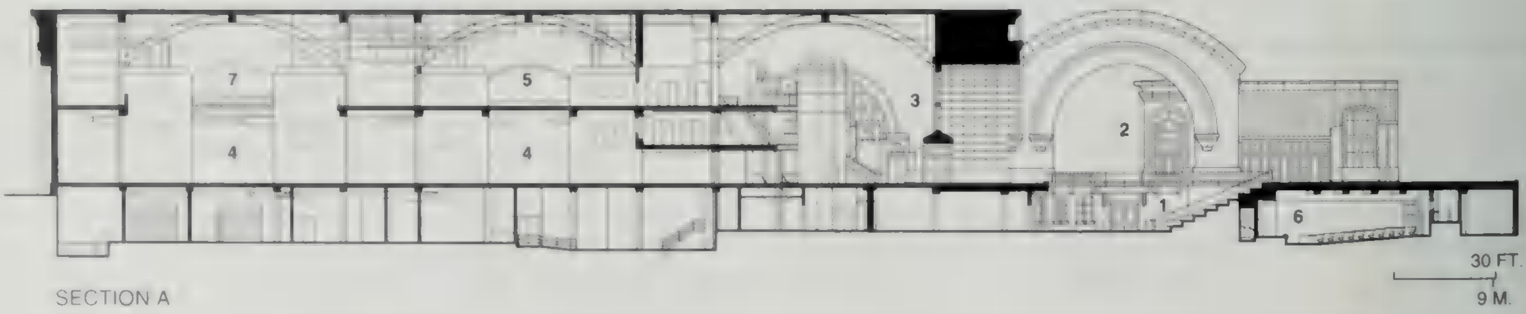
Each firm brought clearly identified strengths. Moore/Andersson, which had developed significant elements of the design in the competition, led the effort through the schematic phase. When the project reached design development, "we became more invested in the project," says Sundberg, "and began working with sub-consultants." He acknowledges the complementary nature of a relationship based on shared values; however, initial decisions were often deferred to the design architect for concurrence. "We were not trying to outshine Moore/Andersson," Sundberg says. He also cites airline travel for face-to-face meetings between the associated architects as a boon to the relationship.

Work shifted between Texas and Seattle as the job progressed. The topics were far-ranging, but conversations were compressed by a quick five-month window for construction-document preparation. Both companies had to agree, quickly, on the esthetic issues surrounding detailing of brick and concrete, the primary building materials. Here is how they worked: Moore/Andersson developed the

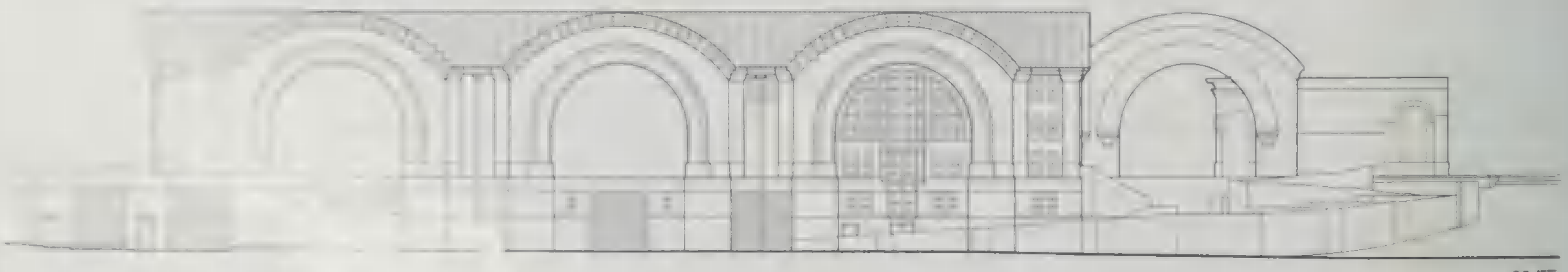


The outdoor amphitheater (above), rises from the concourse level to the entrance.

1. *Amphitheater*
2. *Open*
3. *Lobby*
4. *Permanent exhibits*
5. *Temporary exhibits*
6. *Auditorium*
7. *Future exhibits*

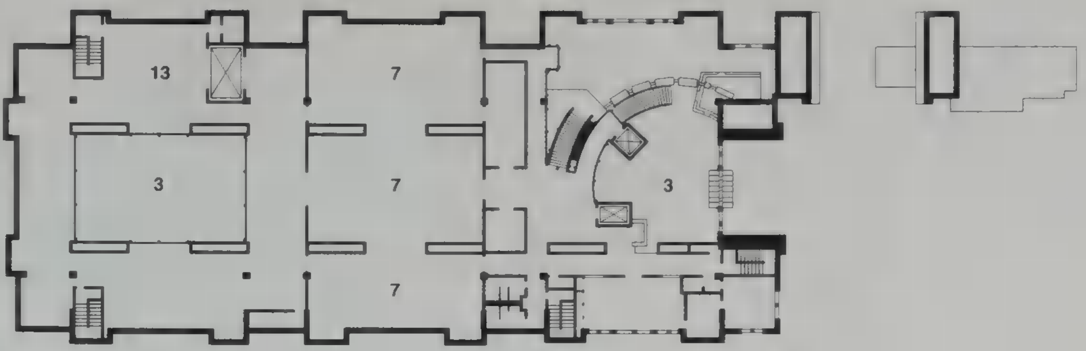


SECTION A

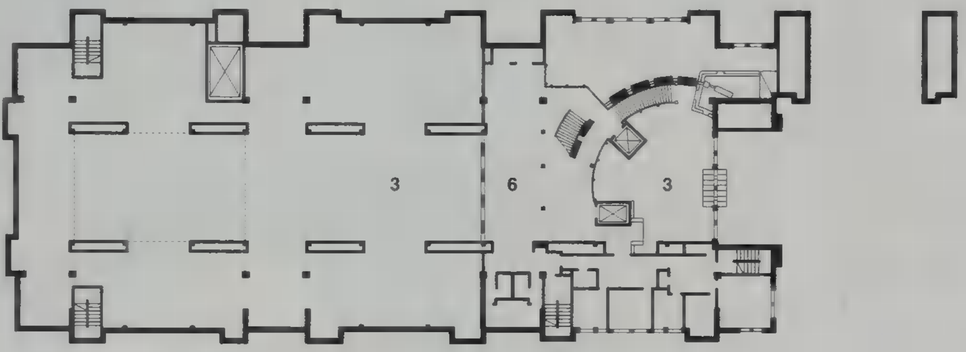


EAST ELEVATION

The building plans explain the museum program. The concourse level houses storage and education functions, including classrooms and the auditorium; permanent exhibit space is on the first level behind the lobby; offices and community-meeting spaces are on the mezzanine. The second level includes traveling exhibitions and the board room.

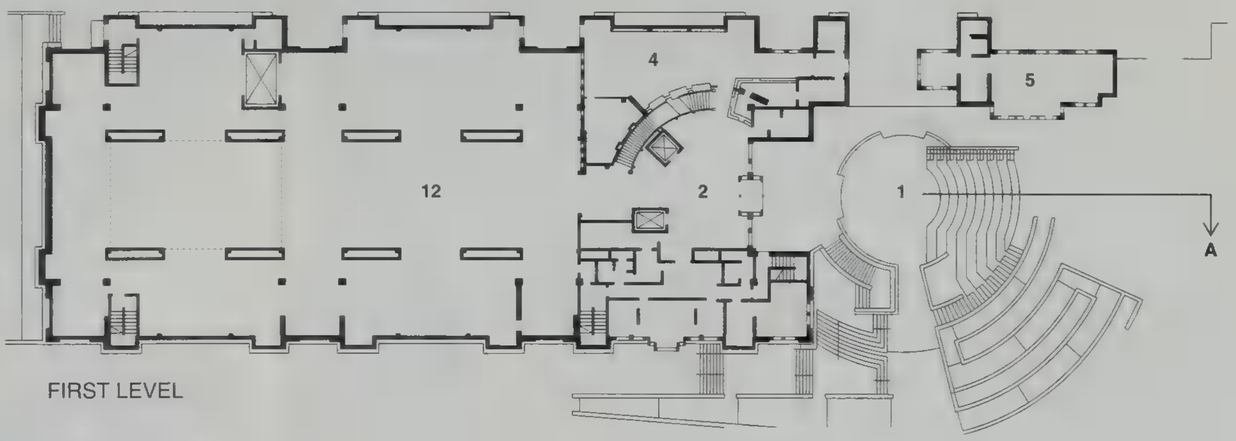


SECOND LEVEL

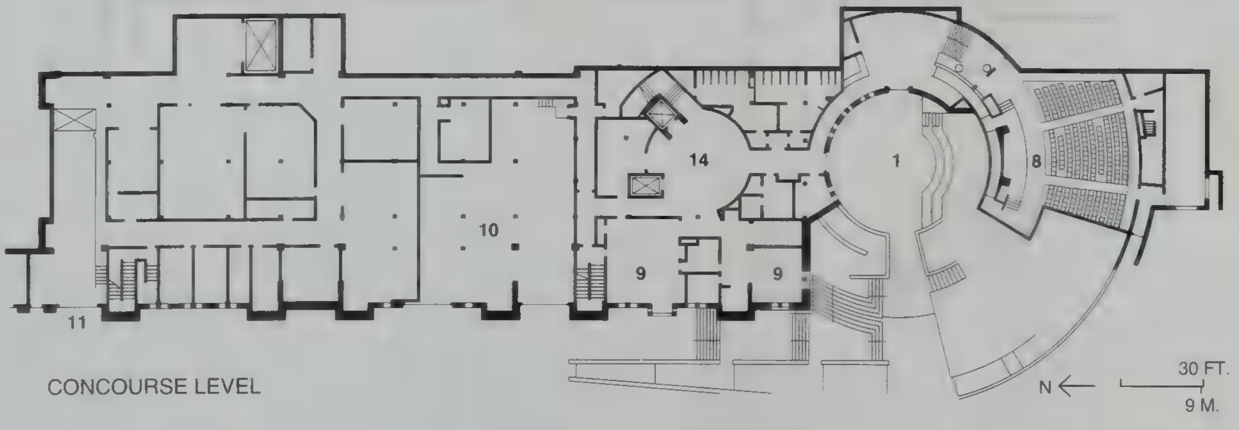


MEZZANINE LEVEL

1. *Amphitheater*
2. *Lobby*
3. *Open to below*
4. *Bookstore*
5. *Cafe*
6. *Mezzanine*
7. *Temporary exhibits*
8. *Auditorium*
9. *Activity room*
10. *Mechanical equipment*
11. *Loading dock*
12. *Permanent exhibits*
13. *Future exhibits*
14. *Concourse lobby*



FIRST LEVEL



CONCOURSE LEVEL

MUSEUM STORE

proportioning systems for the large masonry arches in Texas; Olson Sundberg, which had little experience in brick, detailed the walls to achieve the proportions. Olson Sundberg, which had a strong history in concrete detailing, took the lead in working out that material's handling. Andersson, who wanted a curved metal fascia, allowed the Seattle architects to devise a faceted, segmented substitution—a more practical solution. Although both architects mention the challenges posed by the heroic scale of the concrete work, "structurally, the building went together beautifully," Sundberg says.

The association of architects paid off. When the history museum was bid, "we had wonderful drawings," says Copland, the state's project manager. Contractors were pre-qualified for bidding, reviewed for previous experience on projects of comparable scale and type—a first for the State of Washington for a design-bid-build project. Nevertheless, there were risks involved in a bid that was decided on lowest cost. "There were no alternates [additional design elements that are sometimes used to control bid cost], just one number." Of seven final bidders, three were within $50,000 of the estimate. "We had a contractor [Ellis-Don Construction, Inc.] and away we went."

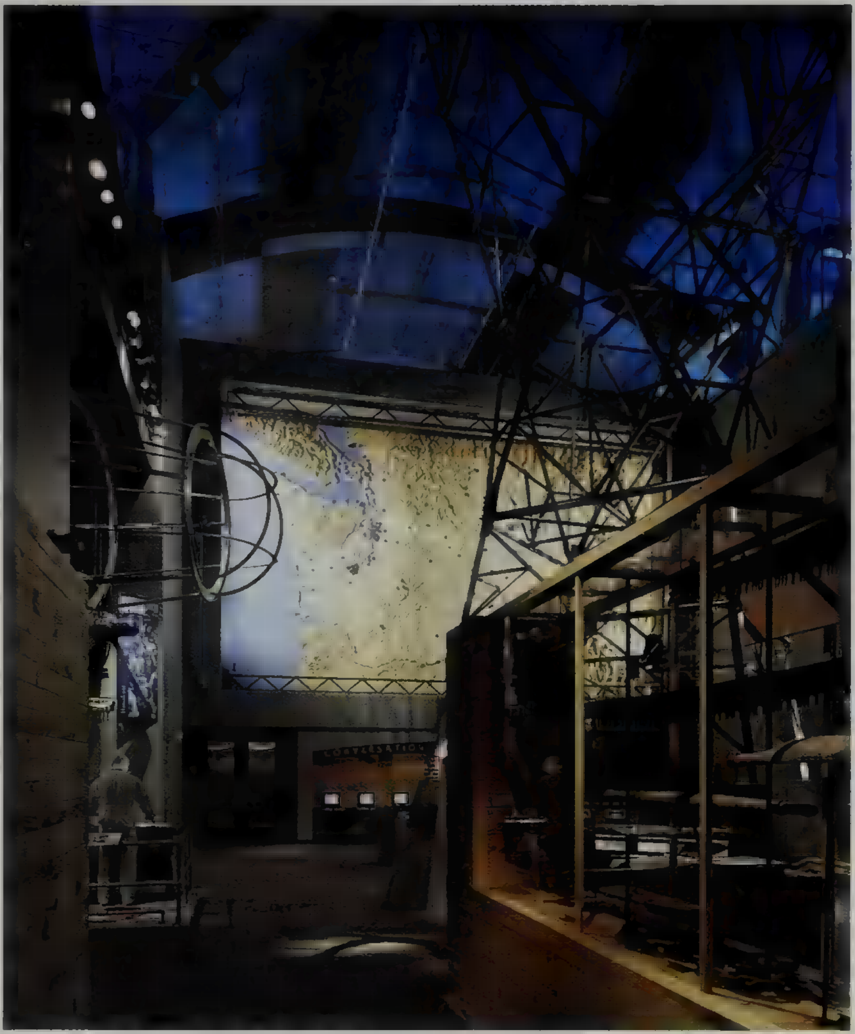
A complicated schedule of charge orders

Two factors compounded the builders' difficulties. First was the challenge of pouring 52-ft-high concrete walls. Many were accomplished in single pours; one of the first pours took 14 hours. A second challenge was the phasing of exhibit design, written on a separate contract, with general construction. Exhibit design followed construction of the building by one phase, according to Copland, requiring "a kind of third project in between—modifying the building as it was being constructed—and a lot of electrical and communication work."

Keeping track of the complicated schedule, of change orders and progress could have been daunting to a museum with a small staff and no experience in new construction. A licensed engineer employed by the Historical Society followed the project throughout the construction phase as a special construction manager, acting much like a traditional "clerk of the works." In addition, the museum had designated a project coordinator within its executive staff, Redmond Barnett, who has since become the head of exhibits.

Although the schedule had to be modified as it progressed, the project was completed on time. Change orders brought the building's total construction cost, exclusive of exhibits and fees, to $23 million. The possibility of adding a second phase for the total project remains, awaiting further funding. "We could continue to function and connect two additional bays like opening a valve," says Copland.

The building opened to favorable reviews on August 10, 1996. Michael Sullivan thinks that the demanding process worked for Tacoma: "The museum has been the creator of character and purpose, defining the streetscape, bringing people here for leisure and intellectual time." According to Nicandri, the staff appreciates the new museum's "capaciousness, its ability to hold things and people." But he says that the most flattering reviews have come from patrons who "thought that the building had always been there and had just been remodeled."
Robert Ivy

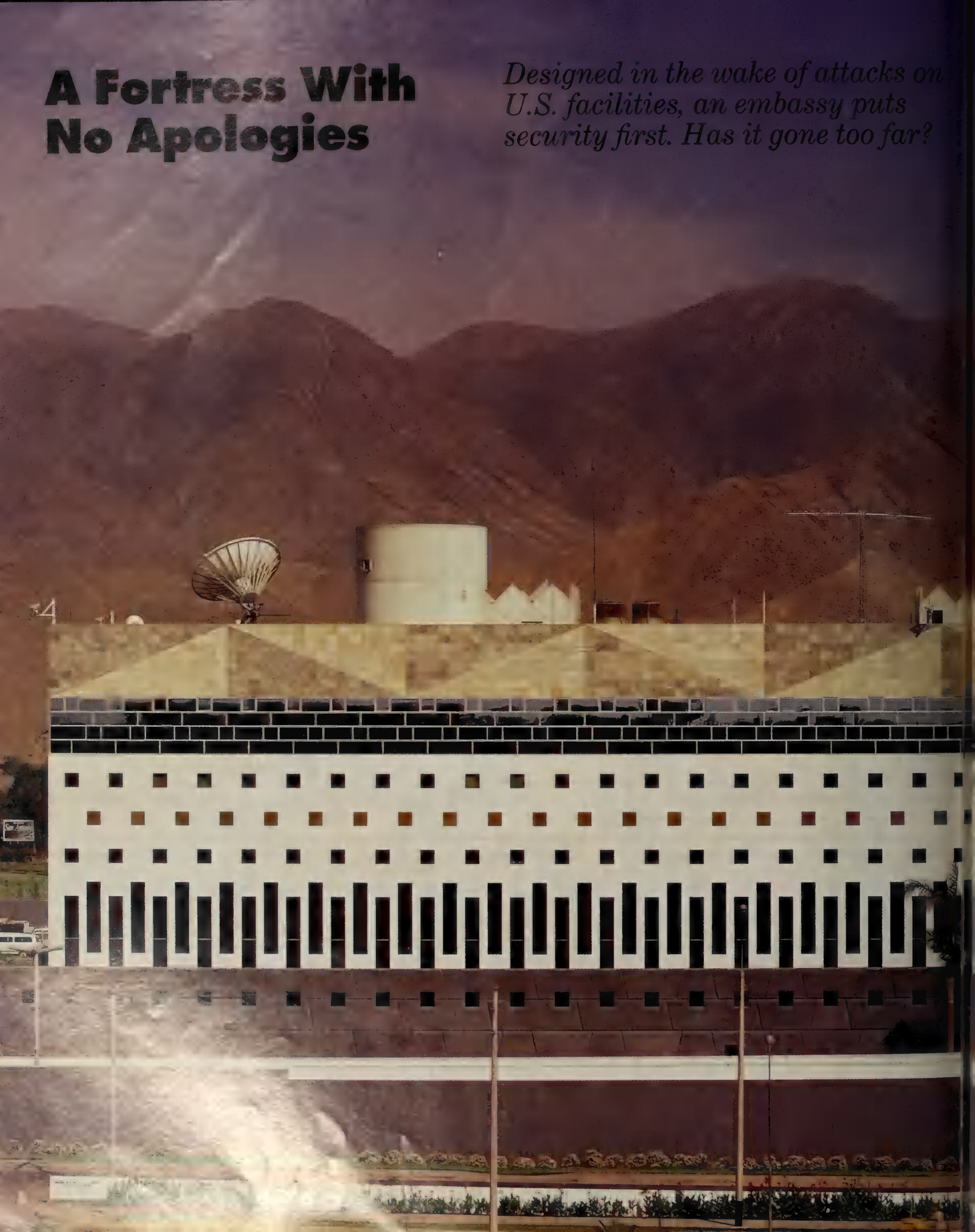


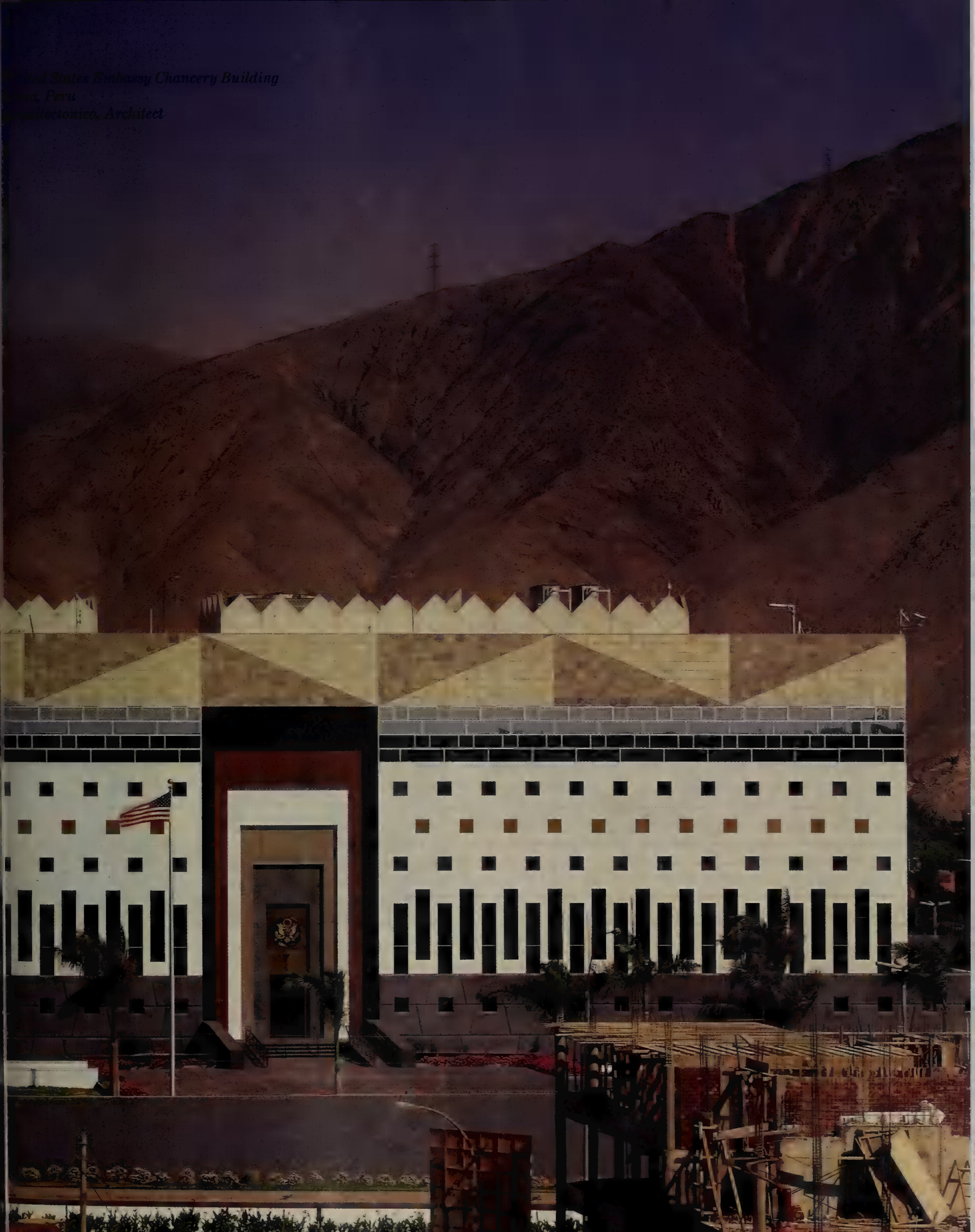
The permanent exhibit hall, as conceived by designer Herb Rosenthal, houses interactive displays and an electrical transmission tower. The entrance lobby (opposite) rises 52 ft to a precast-concrete, vaulted ceiling. Walls and arches are poured-in-place concrete. Freestanding elevator towers lend scale and help orient visitors.

Credits
Washington State History Museum
Tacoma, Washington
Architect: *Moore/Andersson Architects— Charles W. Moore; Arthur W. Andersson, principal-in-charge; Steven Dvorak, project designer; Susan Benz, project manager*
Associate Architect: *Olson Sundberg Architects—Rick Sundberg, principal-in-charge; Scott Allen, project manager*
Project Management: *Dept .of General Administration, Div. of Engineering and Architectural Services, State of Washington*
Engineers: *Chalker, Putnam, Collins & Scott (structural); Affiliated Engineers, Inc. (mechanical/electrical);*
Consultants: *Summit Technology (civil); Nakano Dennis Landscape Architects (landscape); Peters & Myer Illumination Design Collaborative (lighting)*
General Contractor: *Ellis-Don Construction, Inc.*

A Fortress With No Apologies

Designed in the wake of attacks on U.S. facilities, an embassy puts security first. Has it gone too far?





ited States Embassy Chancery Building
ma, Peru
rquitectonica, Architect

One of the most secure buildings in the entire world," is what the facility manager of the new United States Embassy in Lima, Peru, calls his charge. It certainly looks that way. It's longer than a football field by nearly a third (a typically American form of measurement), some 90-ft high, with few windows, and, like a Medieval fortress, surrounded by seemingly impenetrable walls. When the building was being designed in 1989, Lima was one of the most dangerous cities in the world. The activities of a terrorist group known as The Shining Path, participants in a civil war that, according to *The New York Times,* had cost 35,000 lives and $25 billion in damage, included frequent attacks on the former U.S. embassy, a more open, street-front structure in the city's downtown.

A new world

At the time it seemed only prudent to design an embassy that would meet the strictest security standards. But the Peru that greeted the new embassy, dedicated with appropriate pomp and circumstance on July 4, 1995, is a changed place. With the capture of the leaders of the Shining Path in 1993, the era of widespread lawlessness and near economic dissolution is, if not over, then in remission. The Peruvian economy has been transformed under the leadership of President Alberto Fujimori, now in his sixth year and second administration. Inflation has dropped from 7,500 percent to 10 percent annually and economic growth has set a record in Latin America. Fujimori is getting high marks from his constituency for his war on crime and poverty, and his aggressive enticement of foreign investment. Currently, he enjoys an approval rating of over 60 percent.

The changes of the last half decade are evident throughout Lima. A new crop of strip shopping malls has been layered on top of the existing fabric that includes grand Spanish Colonial mansions and civic monuments, tree-lined plazas, and standouts of International Modernism. The once perilous drive from the airport through some of the city's poorest sections to more affluent downtown neighborhoods like San Isidro and Miraflores is now paved with outward signs of prosperity, American-style: new outposts of Kentucky Fried Chicken, Tony Roma's, and Blockbuster Video.

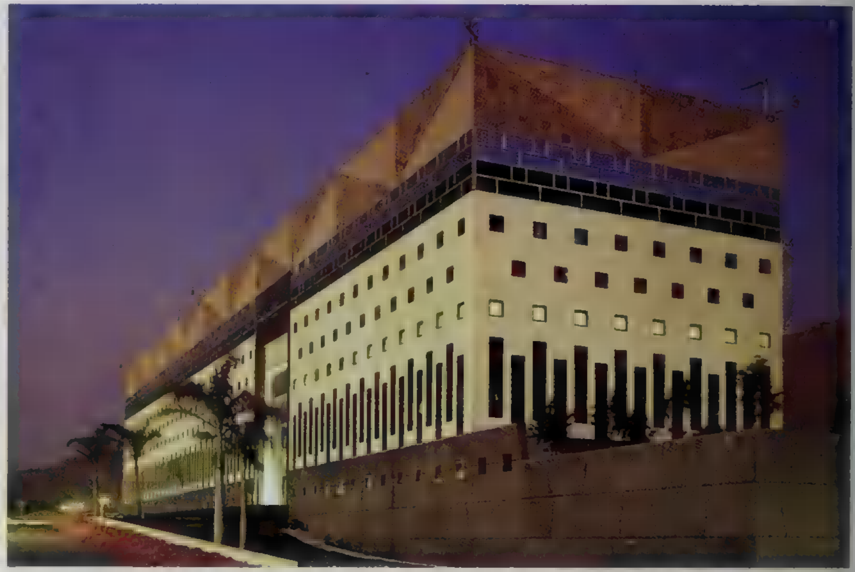
But, even as Fujimori's economic turn-around is touted in the foreign press and Peru has been repositioned as a tourist destination, holdouts of The Shining Path have been making very different news. The guerrilla group took credit for bombing the Lima home of Peru's chief military officer and a central police station in early August. A full-fledged comeback is deemed impossible by Fujimori and unlikely by international experts on terrorism, who argue that the Shining Path has splintered into irreconcilable factions.

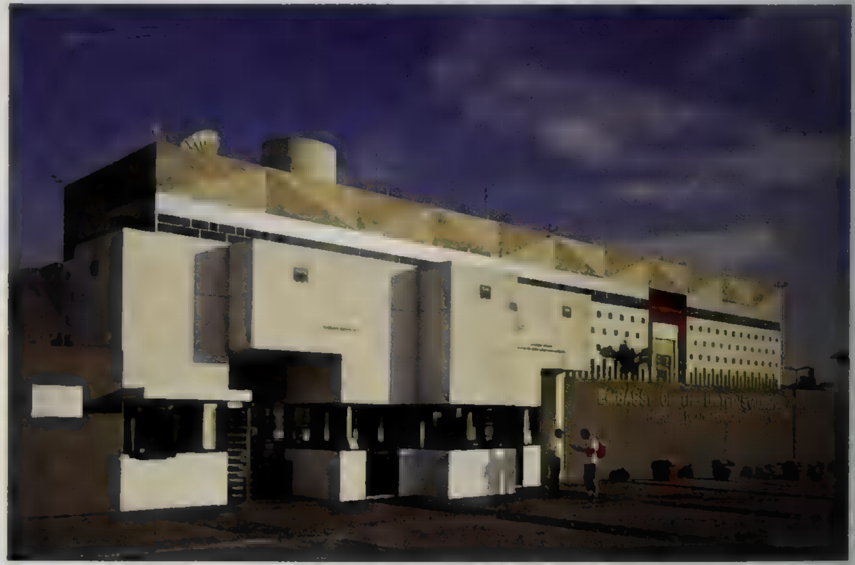
There remains, however, a powerful monetary incentive for the group's activities since it offers protection to coca growers in the dense jungle of the Huallaga valley, the country's main coca-growing region, which is said to be responsible for the raw material for nearly half of the world's cocaine supply.

The new-generation embassy

While Peru [illegible] political and physical change, so is the very [illegible] simply in their role as emissaries of American [illegible] policies, and moral values, but also [illegible] were, until recently, [illegible] confident in its guiding principles [illegible] Stuart L. Knoop, an expert [illegible] August 1992, pages 36-[illegible] in 1983,

The embassy campus is located in the Monterrico section of Lima, east of downtown (opposite). It is in the foothills of the Andes mountains on land that was once used for polo fields. The Lima Polo club still maintains two playing fields behind the embassy.





© Peter Aaron/Esto photos

Visitors to the embassy must pass through a sally port (above). The majority are applying for entry visas to the U.S. and must proceed to the consular courtyard at the building's north end rather than queue out front as at the former embassy. A courtyard with palms is used for formal visits (top).

when the U.S. Embassy and marine barracks in Lebanon were attacked by truck bombs. America responded to the Beirut attack with the passage of the Omnibus Diplomatic Security Act of 1986 and the institution of new embassy design guidelines.

Finding the right site, right architect

An important early step for the U.S. Department of State's Office of Foreign Building Operations (FBO) in overseeing the design of a new-generation embassy is the selection of the site, one large enough to accommodate the new FBO preference for 100-ft setbacks from the street and parking separated from the building. Convenience for employees, visiting Americans, and the over 400 Peruvians who seek entry visas to the U.S. daily is sacrificed for safety. Amid the sprawl of Lima, the choices were limited, and the FBO eventually purchased 1 1/2 polo playing fields from the Lima Polo Club, a total land package of some 21 acres, in Monterrico, a growing residential and commercial neighborhood in the east edge of the city, near the foothills of the Andes.

The Miami-based firm Arquitectonica was selected as architect based on the qualifications of the team it assembled. Principal Bernardo Fort-Brescia's Peruvian heritage, an asset in the firm's capture of the $54-million Banco de Credito commission in Lima [RECORD, February, 1989, pages 90-99] was, the architect claims, a mixed blessing when it came to the U.S. embassy because of political tensions that then existed between the U.S. and the host country. His firm's previous experience with the bank, which was at a scale, structural complexity (the building is in an earthquake zone), and level of finish unusual for Lima at the time, outweighed any perceived risks of divided loyalties. What's more, he, like all members of his firm who worked on the project and all firms that do work for the FBO, was subject to background checks to obtain security clearance.

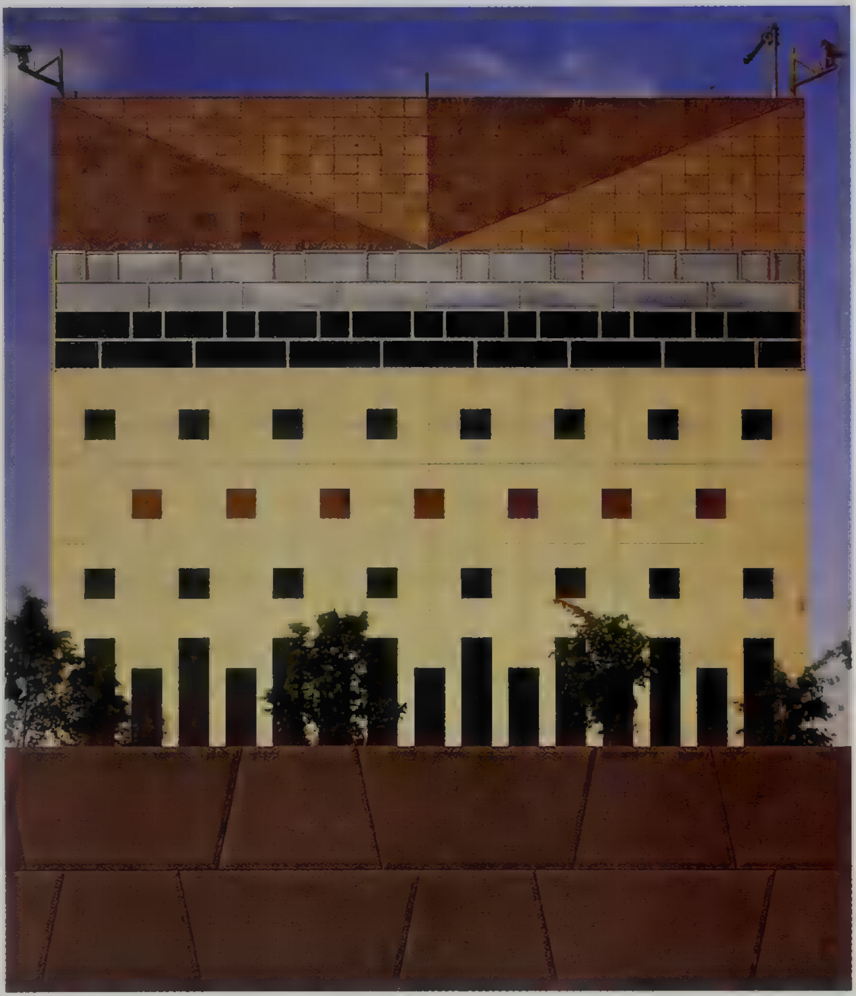
The message is "keep out!"

Like many of the embassies built since 1986, (Bolivia, Chile, Columbia, Cyprus, El Salvador, Kuwait, Jordan [RECORD, May 1993, pages 66-73], Oman, Thailand, Venezuela), the Lima embassy puts a different face on foreign diplomacy. Forget architecture as goodwill ambassador. The message now is "keep out!" Following the adoption of the more stringent guidelines, which in addition to setback requirements, also limit the percentage of surface area that can be devoted to windows and the actual size of the openings (in this case, 15 percent of the structural bay of 32.5 ft wide by 13 ft high), virtually pre-determines a bunker-like appearance.

As with the Banco de Credito, Arquitectonica's brash style proved ideally suited to the task. The firm originally proposed three possible schemes within a masterplan that included an Ambassador's residence, Marine dormitories, and an annex office building (all of which remain unbuilt, for now), which is consistent with FBO requirements. A Z-shaped structure and a courtyard scheme were dismissed in favor of the single rectangular volume that was ultimately built because, says Fort-Brescia, the "corner is the weak point" for blast resistance. "The fewer corners, the better."

The program was big and complex—from offices for the Ambassador and a vast array of staff to consular services; accommodations for Drug Enforcement Agency personnel; information libraries; and medical, security, and housing services for members of the Foreign Service stationed in the host country. To accommodate these functions, the rectangular block had to be enormous: 200,000 sq ft in five stories. The architects studied the proportions of various rectangles,

The front entrance, which is primarily for ceremonial use, is framed in alternating bands of American and Peruvian stone and metal (opposite). The bronze door was designed by Arquitectonica principal Laurinda Spear.



The facade was designed as a tapestry to cloak the five-story bulk and minimal fenestration, "a Modern architectural version of a pre-Columbian textile," according to Arquitectonica (above). Different materials give the illusion of depth. (Terrorists can't scale flat surfaces.) Reinforced perimeter walls are meant to resemble rock patterns of Inca structures.

eventually accepting that the building would have no subtle manipulation of form, save for the ceremonial entry framed by alternating planes of stone and metal that give the appearance of a forced perspective. "There is a moment when you decide there are no apologies," says Fort-Brescia of attempts to disguise the building's bulk. "How do you give life to this coffer? You make it into a mural."

"Neo Andean" style

Arquitectonica quite literally took inspiration from Peruvian history, modeling the base of the building on the structures of the ancient cities of Cuzco and Machu Picchu. (For more contemporary, defensive purposes, the trapezoidal panels are welded to steel plates embedded in concrete.) Layered on top are more Modern references that commingle Peruvian and American cultures. A grid of gold squares is meant to refer to Peru's rich mining heritage. Sized to match the windows, they make the wall look less formidable. The bands of tinted glass suggest ashlar-patterned stone while recalling the strip windows of Modern office buildings.

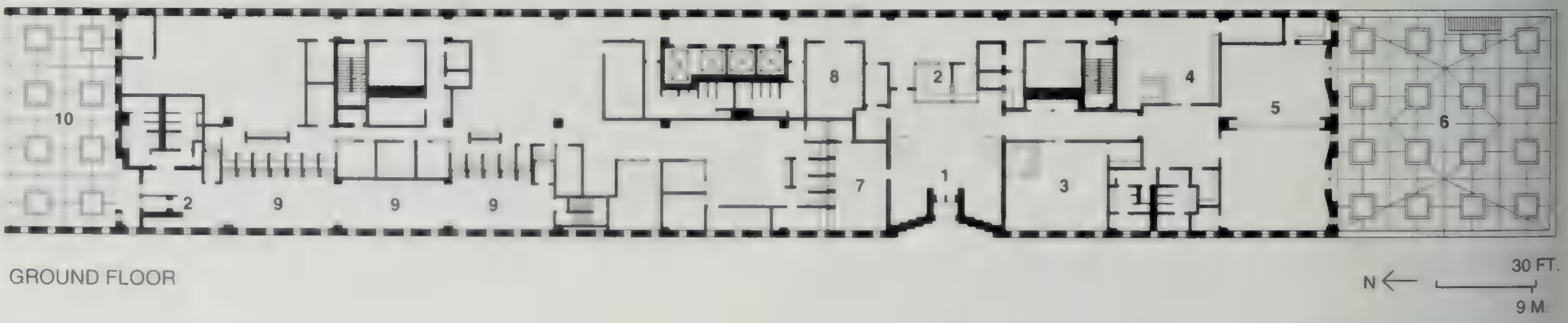
Meant to create the illusion of depth along the top is a triangular pattern of two shades of limestone, anchored to the concrete structure, like all facade cladding, by steel bolts on support angles. Glenn Cameron, local FBO civil engineer and project director, calls the overall mixture of patterns and materials "Neo-Andean style." Patrick Collins, FBO's chief architect, calls it a "billboard building."

Inside, the building's footprint is highly flexible because it "allows for large chunks of contiguous, adjacent floor space," says Miguel Aparicio, FBO's project architect for Lima, who rates the overall plan of offices as "very successful," particularly since embassy staff is continuously growing and shrinking, affected by government cutbacks and the changing demands of the host country. A main corridor along the east wall provides views to the mountains and, says Aparicio, reduces the need for orienting graphics. A landscape plan that includes palm trees and lush lawns is proving costly to maintain, since it rarely rains in Lima and the local river that was to be diverted for irrigation does not meet American Food and Drug Administration health and safety standards. (A water-treatment facility is in the works since, as embassy workers concede, high water bills for the use of city water, which is a precious commodity, are not good for public relations.)

The dawn of yet another era

While the Lima embassy employs elaborate security techniques, recent events—the attack on barracks in Saudi Arabia and the destruction of the Murrah Federal Building in Oklahoma City—suggest that the notion of who "the enemy" is is subject to change. Are architects to design against a "war or a weirdo?" asks Fort-Brescia.

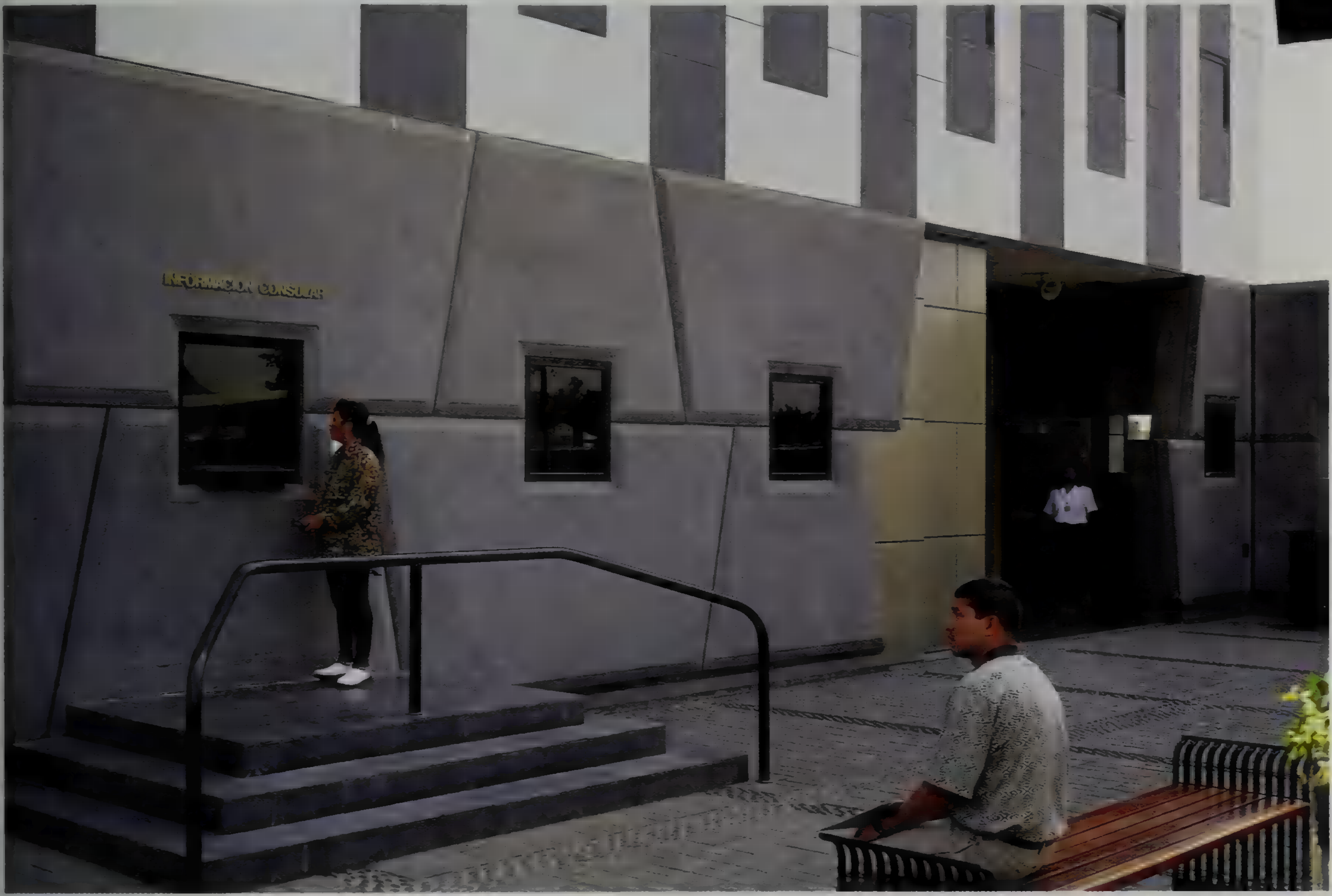
Whatever the defensive position, the overall public image of the ultra-secure embassy is uncomfortable to many, including those who work inside the walls. As FBO's Collins explained to RECORD regarding the design competition for the new U.S. embassy in Berlin [RECORD, March 1996, pages 36-43], diplomatic personnel are increasingly resistant to living behind walls. In fact, FBO relaxed building-setback requirements for embassies currently being designed, including Berlin and Ottawa, partly to avoid the effect of a fortified compound, partly to respond to the realities of an urban context, and partly due to the prohibitive cost of applying the 1986 standards around the world. These developments shed new light on the Lima embassy: is it, one year old, anachronistic already or, is it, in an ever-volatile world, harbinger of the future? Certainly it's one of a kind. *Karen D. Stein*



GROUND FLOOR

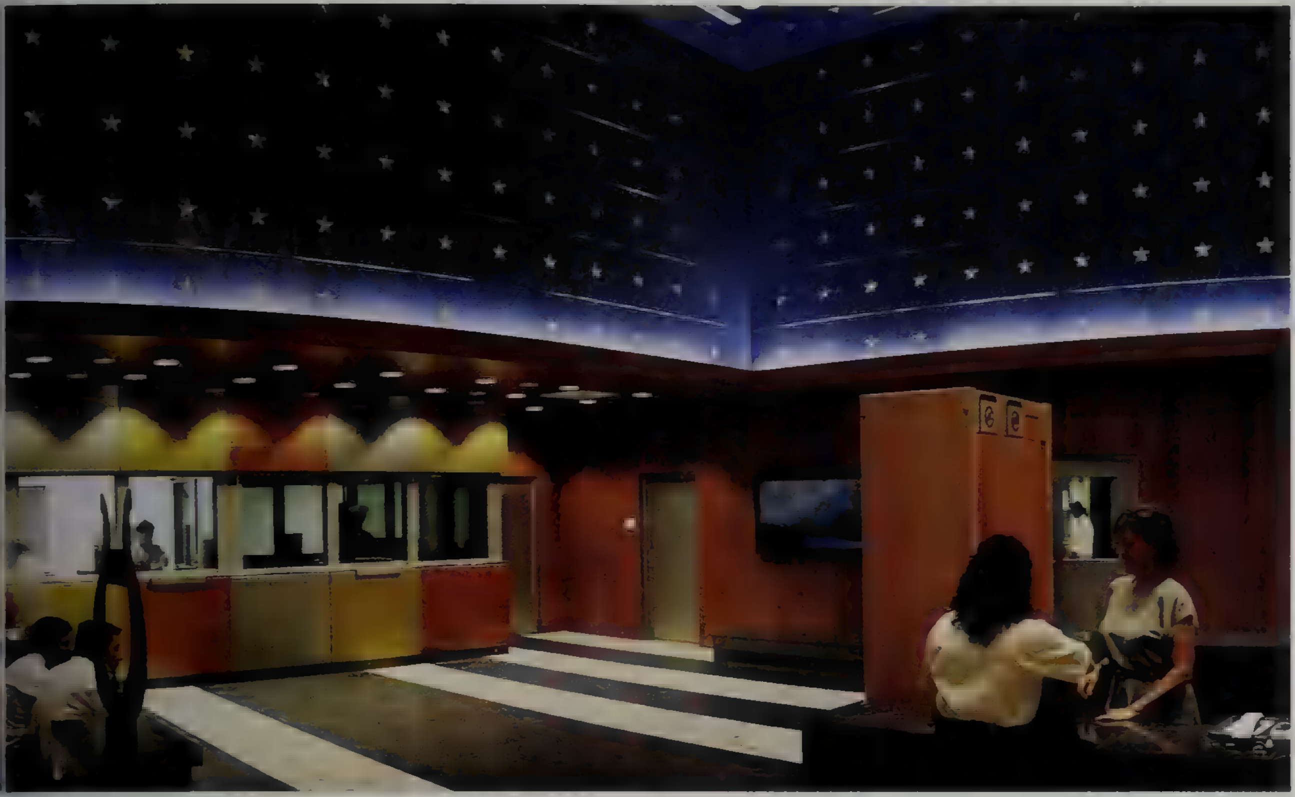
Due to U.S. Department of State security requirements, only a schematic floor-plan can be shown.

1. *Ceremonial lobby*
2. *Security checkpoint*
3. *Business information center*
4. *Research center*
5. *Auditorium*
6. *Reception terrace*
7. *Library*
8. *Conference room*
9. *Consular services*
10. *Consular courtyard*

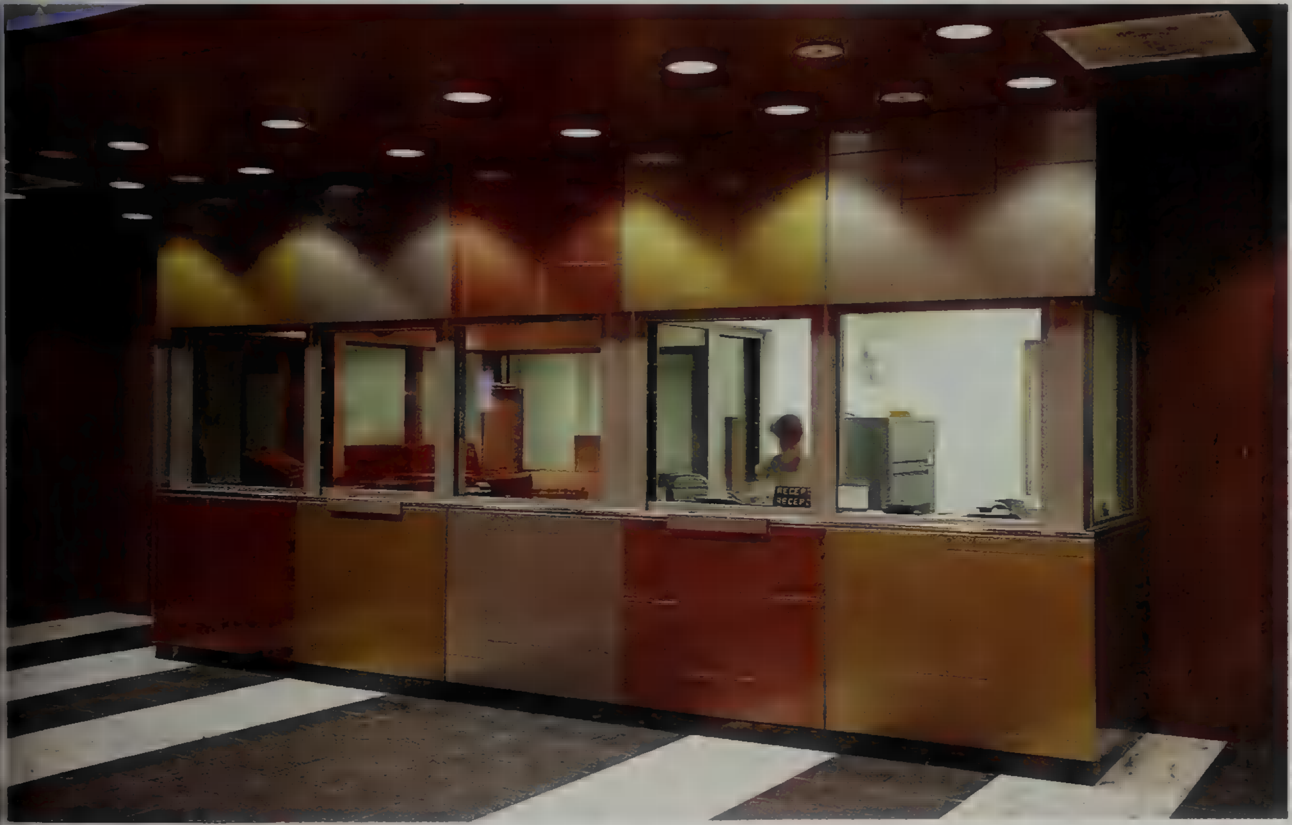


Arquitectonica's use of materials counters the impression of impenetrability. Gold-painted stainless-steel squares mimic windows (above middle) and, along with strips of tinted glass at the building's top, give the impression of more openings. The architects took advantage of a higher grade on the north side to create a protected forecourt for consular services (top), where Peruvians come to apply for visas to the U.S.

Inside the consular area, one of the most heavily-used sections of the embassy, is a waiting room with terrazzo floor patterns that are meant to recall Peruvian textiles (left). Consular officials review visa applications from behind protected booths.



Credits
United States Embassy Chancery Building Lima, Peru
Architect: *Arquitectonica—Bernardo Fort-Brescia and Laurinda Spear, principals-in-charge; Armando Trujillo, Martin Wander, project managers; Sergio Bakas, project architect; Ailsa Simon, Eduardo Luaces, Dan Zabowski, Peter Alvarez, Janice Rauzin, Diana Farmer, Tony Moreno, team*
Engineers: *EDAW (civil); Lehr & Associates (mechanical/electrical/plumbing); Riva Klein & Partners (structural); Law Engineering (geotechnical)*
Consultants: *Arquitectonica with MBB Design (interiors); EDAW (landscape); Robert J. Laughlin & Associates (lighting); Cini Little International (kitchen)*
General Contractor: *J.A. Jones and Graña Montero*



Walls of the ceremonial lobby are lined with two wood species creating broad stripes, while the ceiling is covered in blue metal panels with gold stars (opposite and top). A security checkpoint is occupied by a receptionist and an on-duty Marine who direct visitors (above). Upstairs, corridors are lined with black granite columns. Their forms were derived from ancient Incan structures (top right).

A Quiet Sanctuary By the Highway

A four-layered glass facade screens out the city's sights and sounds while filling the church sanctuary with daylight.

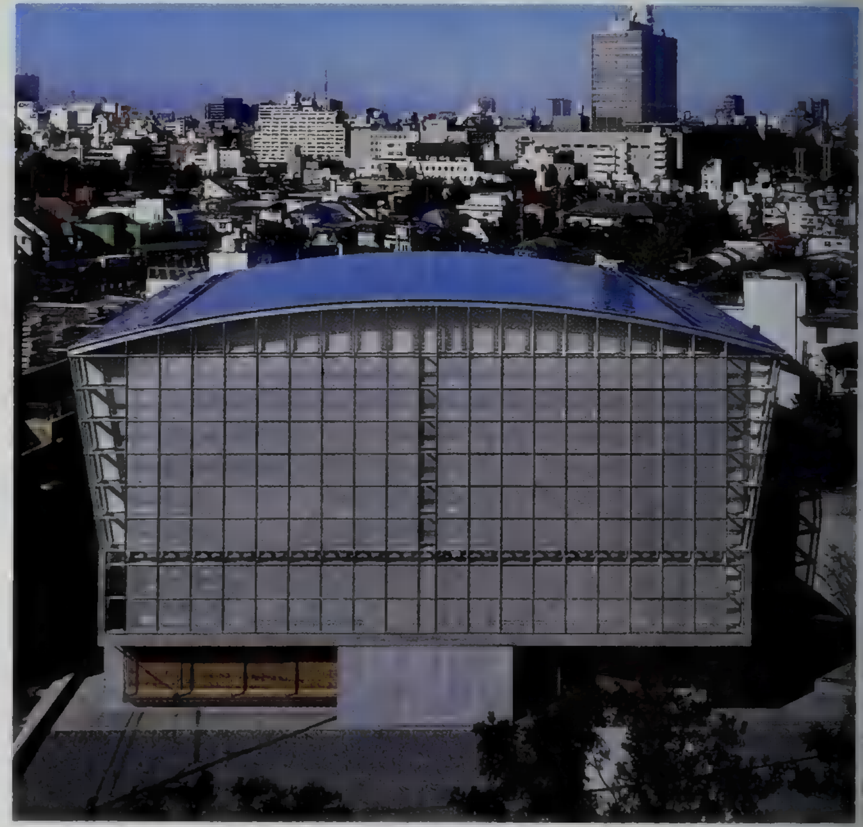
Responding to an appeal from General Douglas MacArthur, American missionary Dr. George Gurganus came to Japan in 1949 with the hope of helping the war-ravaged country rebuild itself. Little did he know that some 45 years later his efforts would produce the 800-member Tokyo Church of Christ, and that the congregation's wooden building would be overflowing. Nor could he have imagined that the modest church would be replaced by a new structure designed by Fumihiko Maki, one of post-war Japan's leading architects.

The opportunity to erect a bigger facility came in 1994 when the Tokyo Metropolitan Government bought a third of the church's property. The land, which faces one of Tokyo's multi-lane ring roads, as part of a program to relieve traffic congestion by widening major thoroughfares. The handsome compensation the members received enabled them to realize their dreams of expansion.

One of the project's greatest challenges was siting the large hall on the small plot, given severe restrictions on shadows the building could cast on the surrounding residential neighborhood. Maki limited the length of the shadows by stepping down the building, put daily functions, such as offices, fellowship hall, and children's room, on the larger first floor and the main sanctuary on the second. This allowed the creation of a sequence of spaces: the church-goer is gradually disengaged from the noise of the city, starting at the entrance lobby, and proceeding up the grand stair, through the sanctuary foyer, and ending at the heart of the 24,000-sq-ft church, its 700-seat sanctuary.

Though the hall is oriented toward the street, the translucent glass wall forming the podium's backdrop on the inside and the front facade outside separates them entirely. The milky-glass enclosure lets in abundant daylight, creating a contemplative atmosphere where the play of light and shadow change throughout the day and filtering out distractions from the city beyond. The wall is composed of four layers of glass, two exterior and two interior, separated by a 30-in. air space that not only houses its Vierendeel truss structure but also functions as a vast return air plenum where hot air is drawn into ceiling ducts by natural convection. While ceramic frit on the outer pane helps reduce heat gain and glare from the western exposure, two thin sheets of fiberglass tissue sandwiched between the inner-glass layers create a "shoji" effect inside.

Clusters of pendant light fixtures are suspended over the congregation like constellations. "Metaphorically I wanted to produce a small cosmos," explains Maki. At either side, the curved surface is contained by splayed walls, and where wall and ceiling meet, skylights bring additional daylight into the depths of the sanctuary. In contrast to the dramatic ceiling and monolithic glass wall, Finnish white birch adds warmth to the hall. Outside, sumptuous materials and glossy finishes were [illegible] in favor of concrete, glass, and aluminum panels painted translucent, brownish-silver gray to reduce their metallic [illegible]. "We [illegible] the church to look too luxurious given the spirit of the [illegible] the same time the materials had to have [illegible] church. Maki has employed [illegible] materials and motifs, but this time [illegible] — Naomi R. Pollock



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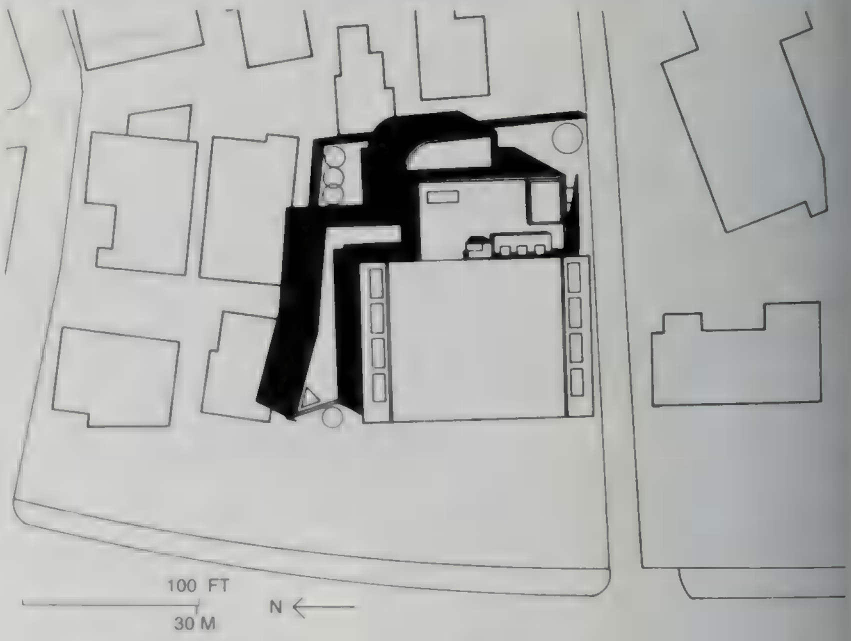
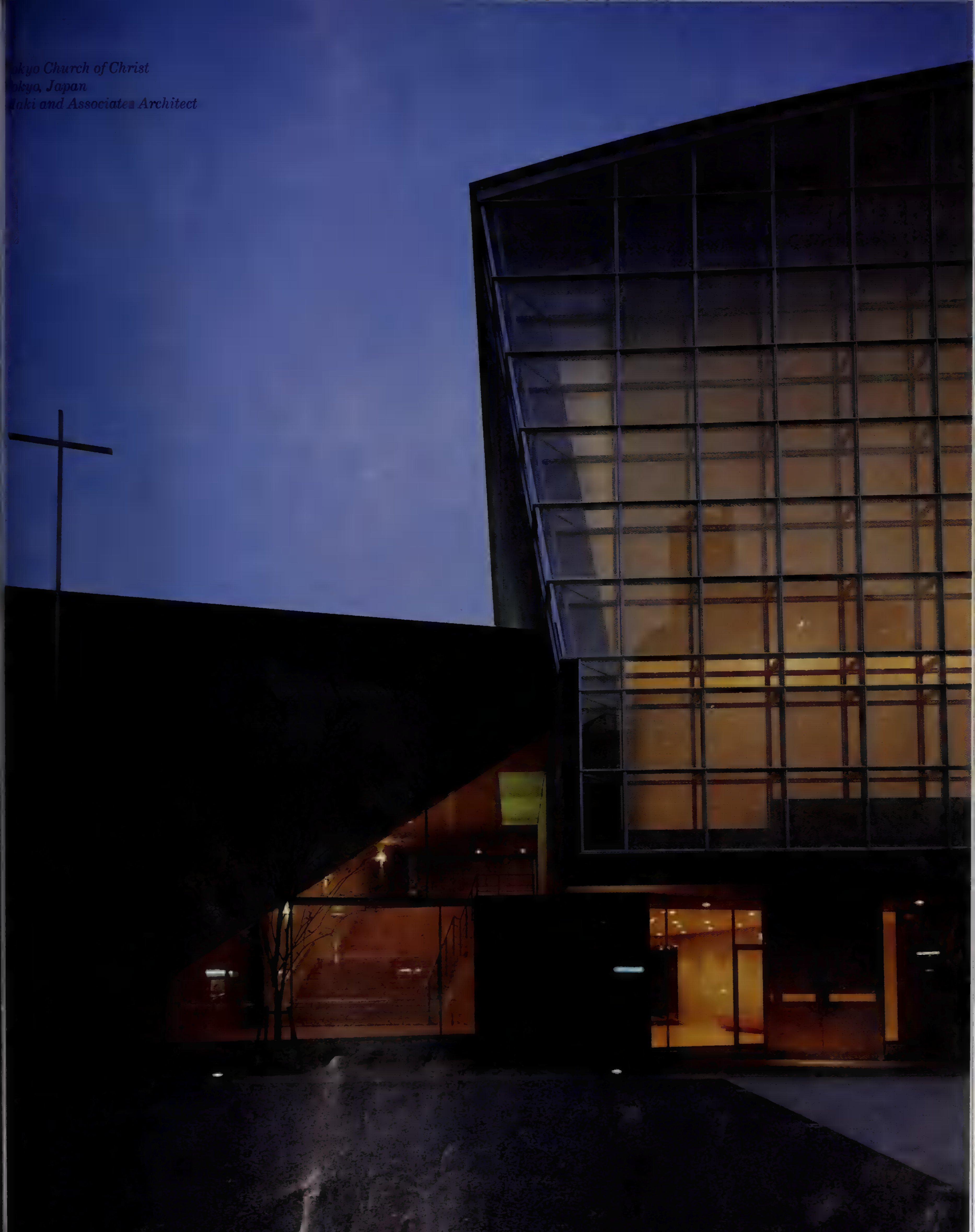
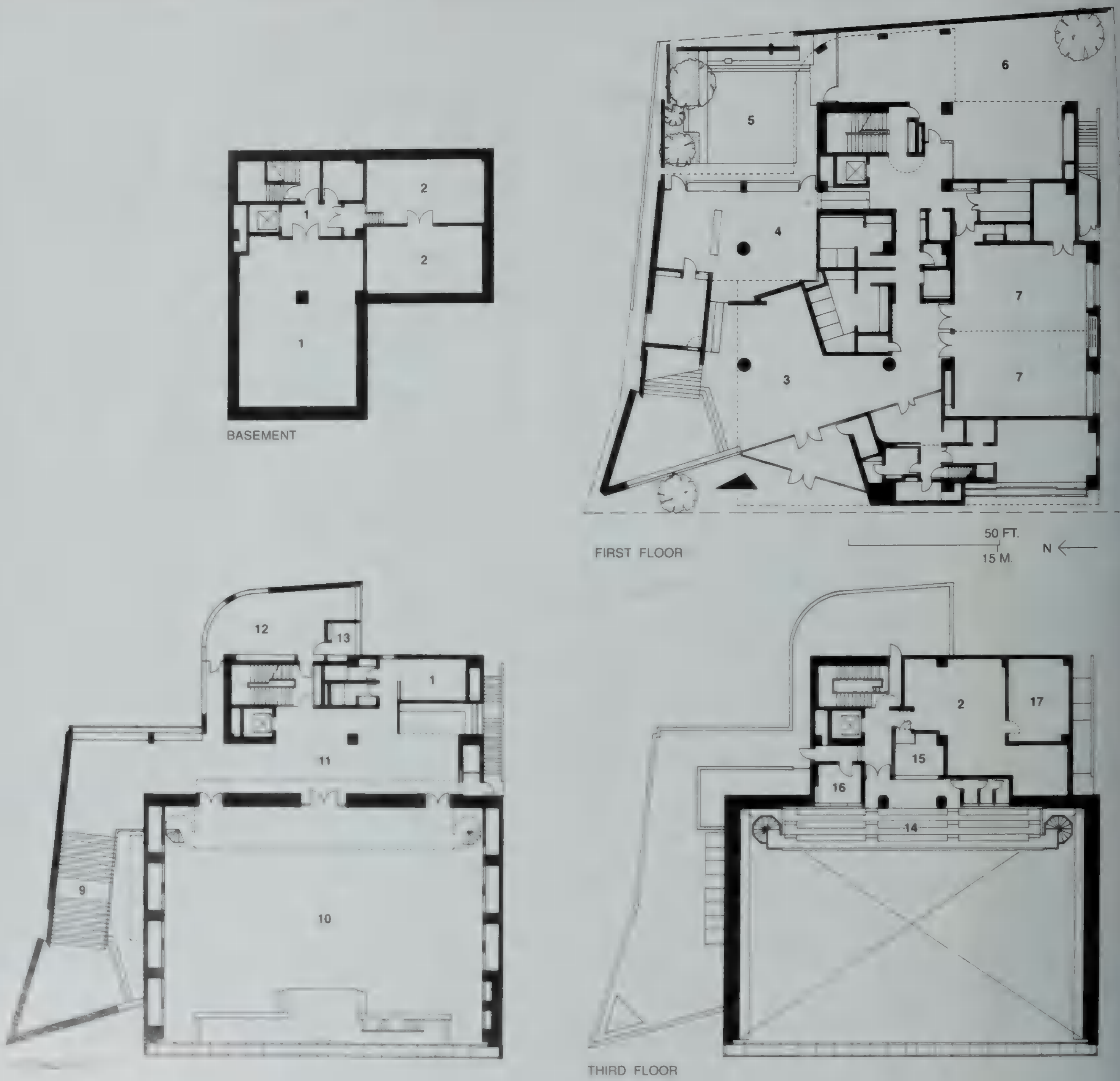


The church's glass facade and arched stainless-steel roof stand out even against the backdrop of one of Tokyo's busiest ring roads (above). The large panes of glass establish the rhythm of the facade (opposite). The sanctuary and third floor are stepped back from the third floor to limit the length of shadows on adjacent property (site plan).



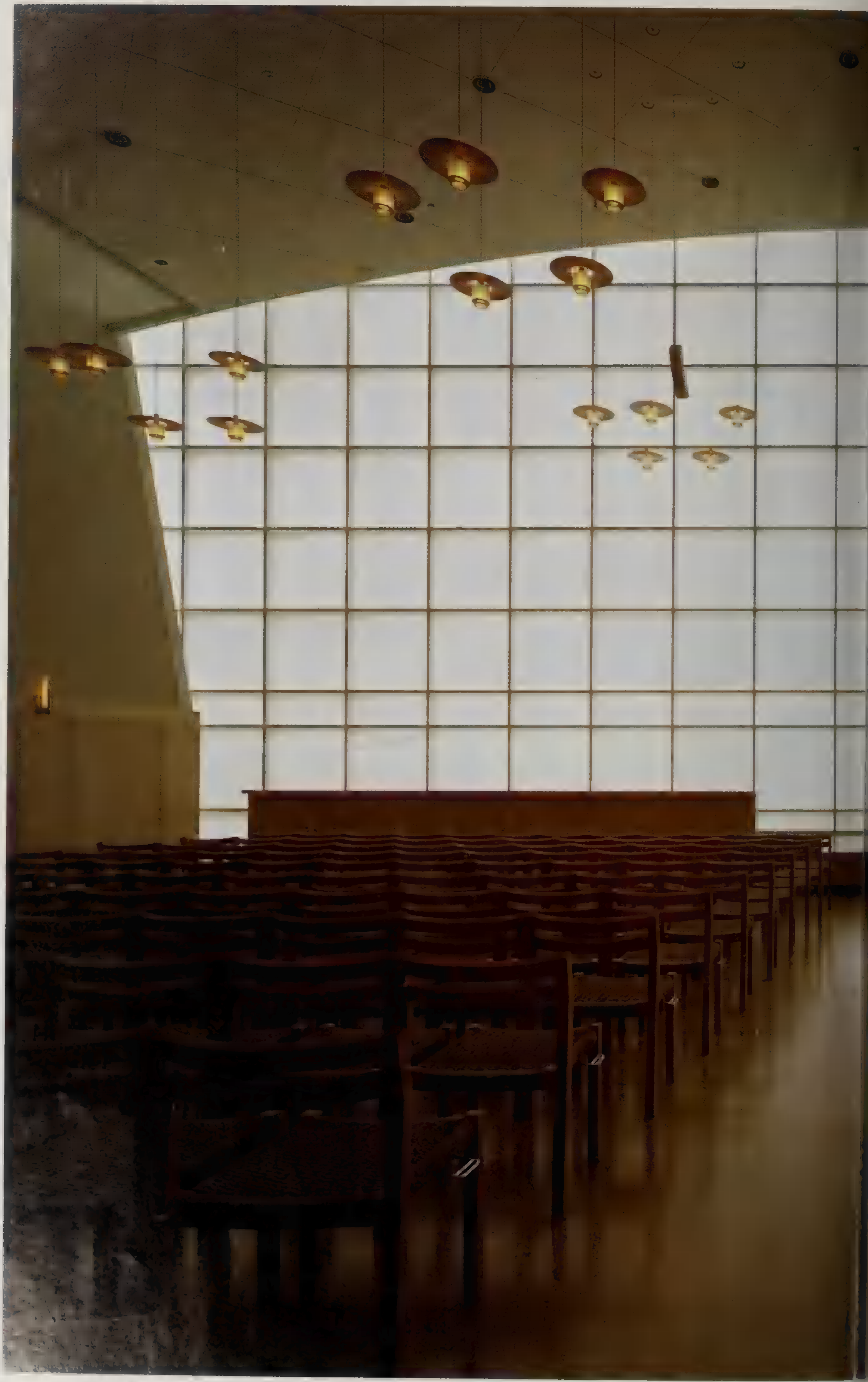
okyo Church of Christ
okyo, Japan
aki and Associates Architect

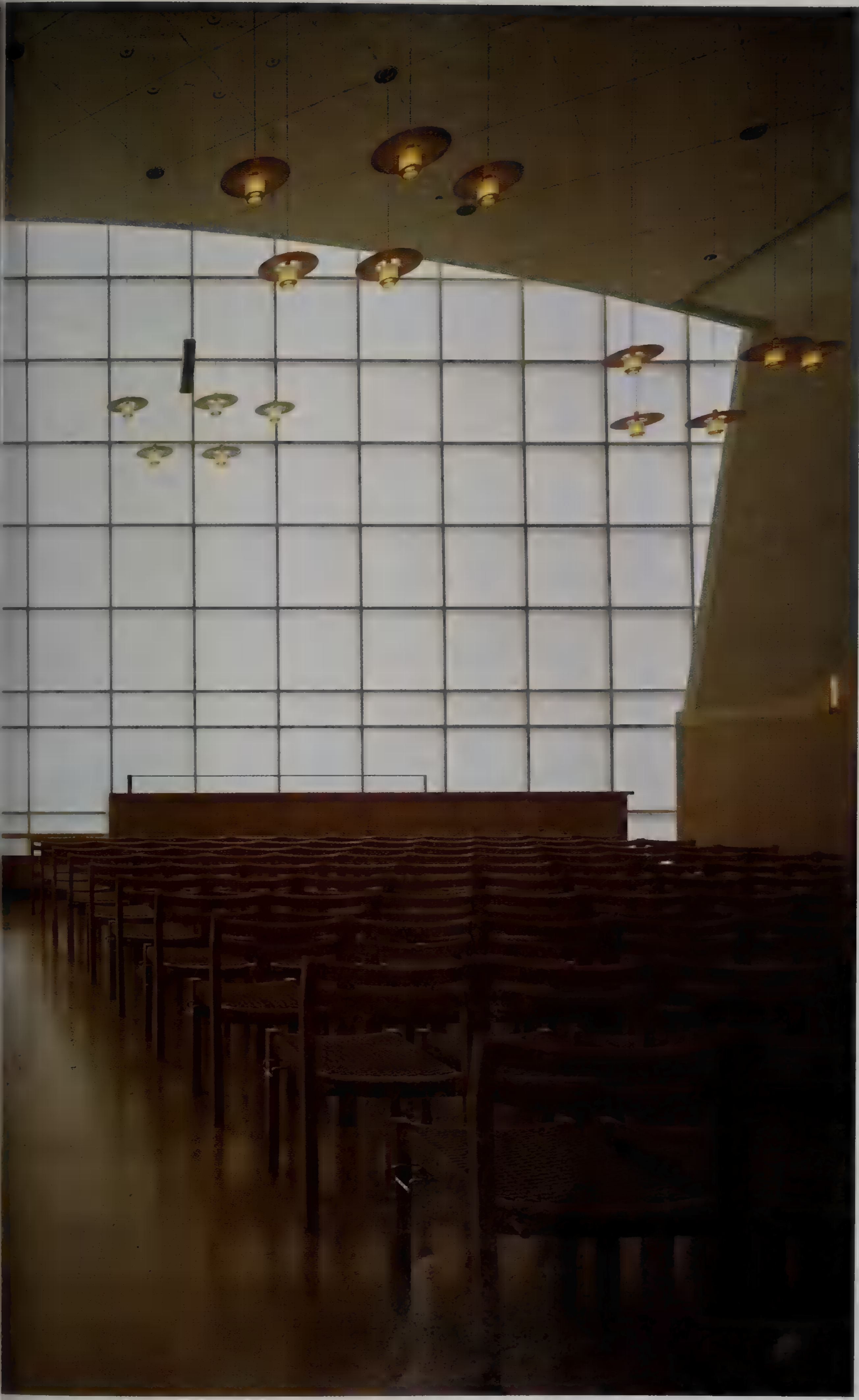
Conceived of as a big house, the church has plenty of spaces (plans below) for informal gatherings. A wood grille edits out the street (opposite top left). From the outside, the glass facade reads like a modern curtain wall (opposite top right). From the inside, the wall, whose cavity is lined with thin sheets of fiberglass tissue, recalls a traditional "shoji" screen (opposite bottom left). Spiral stairs lead up to the balcony in the main hall (opposite bottom right).



1. Storage
2. Mechanical
3. Lobby
4. Lounge
5. Garden
6. Parking
7. Meeting hall
8. Nursery
9. Main stair
10. Main hall
11. Foyer
12. Conference room
13. Study
14. Choir loft
15. Projection room
16. Infants' room
17. Cooling tower

The main sanctuary can accommodate seating for 500 on its flat floor. An additional 200 seats are on the balcony at the rear of the room. Pendant fixtures and sconces designed by Maki complement the daylight filtering in through the sanctuary's glass wall and edge skylights.

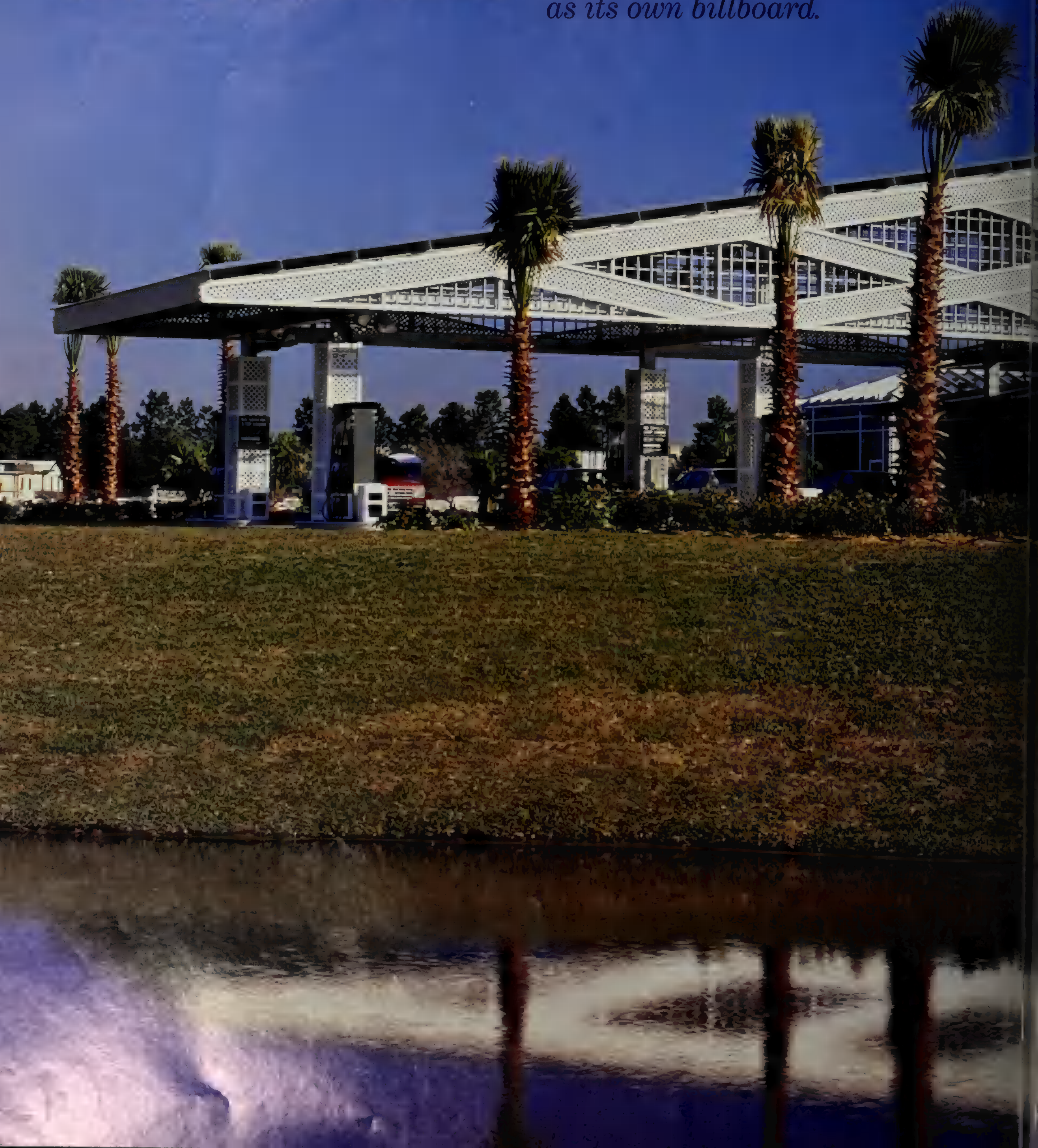


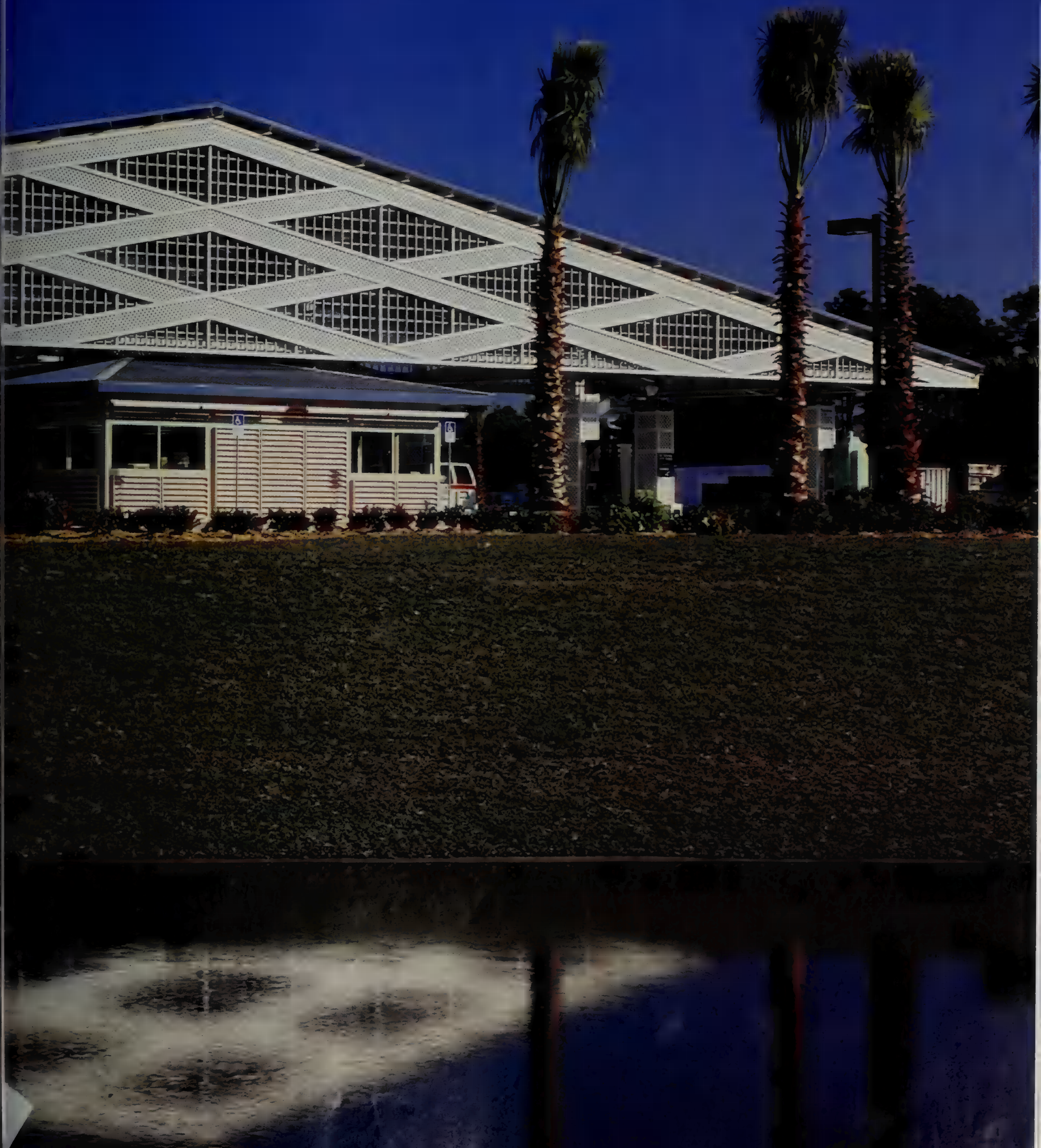


Credits
Tokyo Church of Christ
Tokyo, Japan
Architect: *Maki and Associates—Fumihiko Maki, principal; Iwao Shida, associate-in-charge; Reiko Tomuro, project architect; Tetsuya Mori, Mark Mulligan, designers*
Interior Designers: *Maki and Associates*
Engineers: *Kimura Structural Engineers (structural); Sogo Consultants (mechanical, electrical, plumbing, and lighting)*
Consultants: *Kumiko Nagano, G Planning (planning); Nagata Acoustics (acoustics); Maki and Associates (landscaping); Yamagiwa Lighting (special lighting)*

Designed To Lure Cars Off the Road

Stripped of giant signs, this gas station at Disney World by Hardy Holzman Pfeiffer Associates acts as its own billboard.





Exxon Service Station
Lake Buena Vista, Florida
Hardy Holzman Pfeiffer Associates, Architect
Orlando Alonso Architects,
Architect of Record

Rescuing the gas station from the anonymity of the everyday landscape was the challenge facing Hardy Holzman Pfeiffer Associates (HHPA) when the Disney Development Corporation hired the firm to design an Exxon service station at Disney World. "It forced us to think about something we take for granted," says Hugh Hardy, the principal on the project. And since the client wanted to see four schemes before selecting one, "we had to think about it in four different ways."

Located at the main entrance to the Epcot Hotels complex (where Michael Graves's Dolphin and Swan hotels grab attention), the new gas station serves as a kind of gatehouse to the heavily themed environment just down the road. Competing corporate themes, though, aren't welcome in the Disney universe, so the giant logos sitting atop towering poles and the bright-as-day lighting schemes that oil companies typically use to call attention to their gas stations were ruled out-of-order here. The building would have to be its own billboard, readable from a moving car.

"We wanted something open and transparent, something that would glow at night," explains Hardy. In the scheme Disney selected, the dominant structure is a gabled canopy hovering above eight gas pumps and a 2,000-sq-ft service building. At night, 1000W quartz uplights bounce off the underside of the structure's corrugated metal roof, turning the station into a beacon on the flat Florida terrain. "Most buildings are about enclosure," says Hardy. "But this one is open. It's just a porch. I love the simplicity of it."

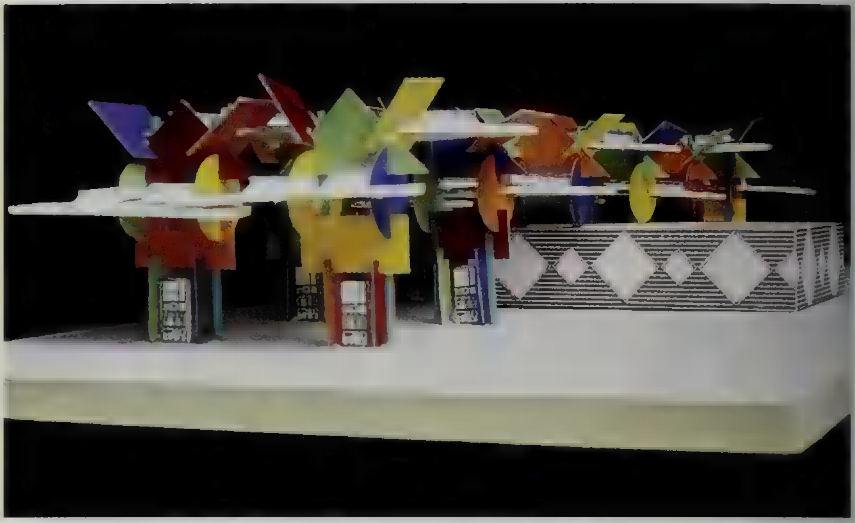
Seeing the station as a pavilion in a garden, Hardy considered adding plants and vines to the trellised gables. "Maintenance, though, was a problem," he reports. "Getting controlled growth of the greenery would have been almost impossible." The architects had more success introducing green areas around the structure, rather than on it. While gas stations at corner locations usually run parallel to one of the intersecting streets, HHPA decided to angle it between the two streets so it would have a high profile from all directions. And by pulling the station back from the corner, the architects were able to create landscaped areas on all sides. "We didn't want to pave the whole site," notes Hardy.

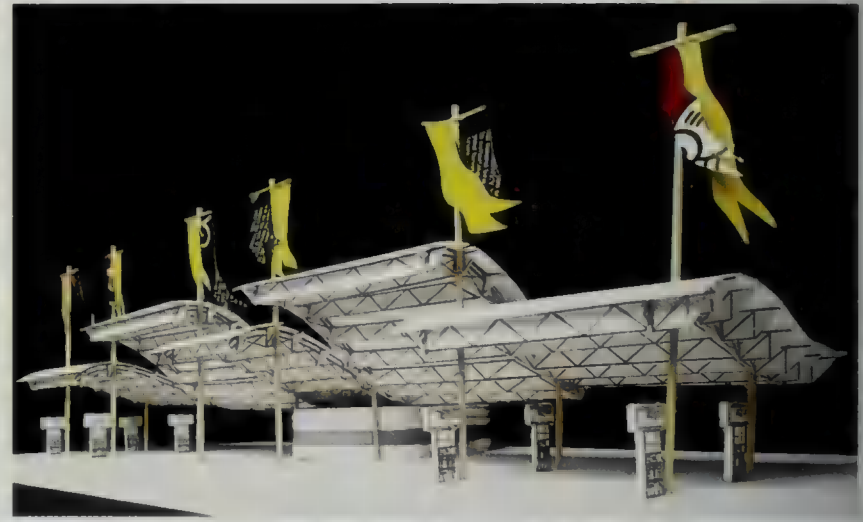
The layout of the station itself (including turning dimensions and the distance between gas pumps) followed rules set by Exxon. But the architects had some fun with the service building, dressing it up as a "Key Largo hut" with Caribbean colors and hipped roof, says Hardy. The small building has metal louvers over a glass curtain wall, so it can be protected from the Florida sun. A small building with mechanical equipment is just behind the station—closer than Hardy would have liked but necessary for technical reasons.

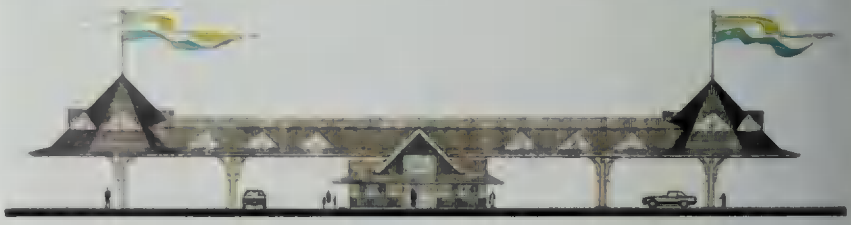
The schemes for the project that didn't get off HHPA's drawing board ranged from a pumped-up Lego set to a suburban commuter's vision of the Shingle Style to a wavy high-tech design (models and drawing, above right). The one that got built is the most straightforward, says Hardy. "It's probably the one that will look best over time."

For a site about a mile away, Disney hired Venturi Scott Brown & Associates (VSBA) to design another gas station. "We told both firms to be interesting and respond to their sites," says Peter Rummell, chairman of [illegible] Engineering, which includes the Disney Development [illegible] "urban" location, VSBA designed a building with [illegible]-outs. Given its wooded site, HHPA's trellis scheme [illegible] says Rummell. "Neither design would have worked on the [illegible]." *Clifford A. Pearson*

Christopher Lovi photos this page







At night, the station glows from the inside (opposite), like a beacon on the road to the Magic Kingdom. The structure is a simple steel frame with metal roof. Layers of overlapping vinyl lattice create see-through gables. Speaking of the design of the entire project, architect Hugh Hardy says, "We wanted as many layers as possible." To give the service station the sense of being an oasis, the architects surrounded it with a ring of palm trees (plan opposite) and landscaped areas beyond that. Alternative schemes (above) show a wide range of approaches to gas-station design.

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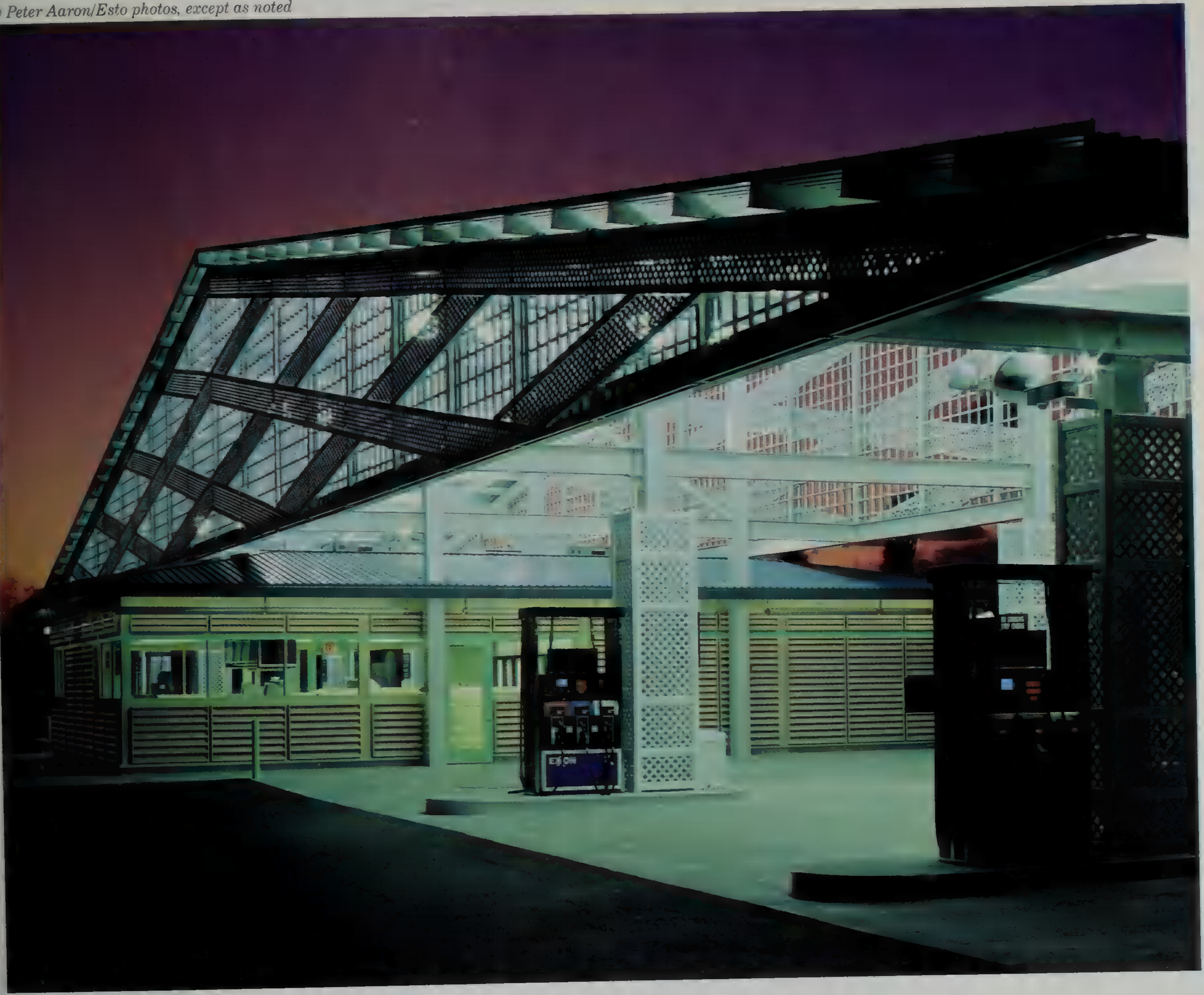
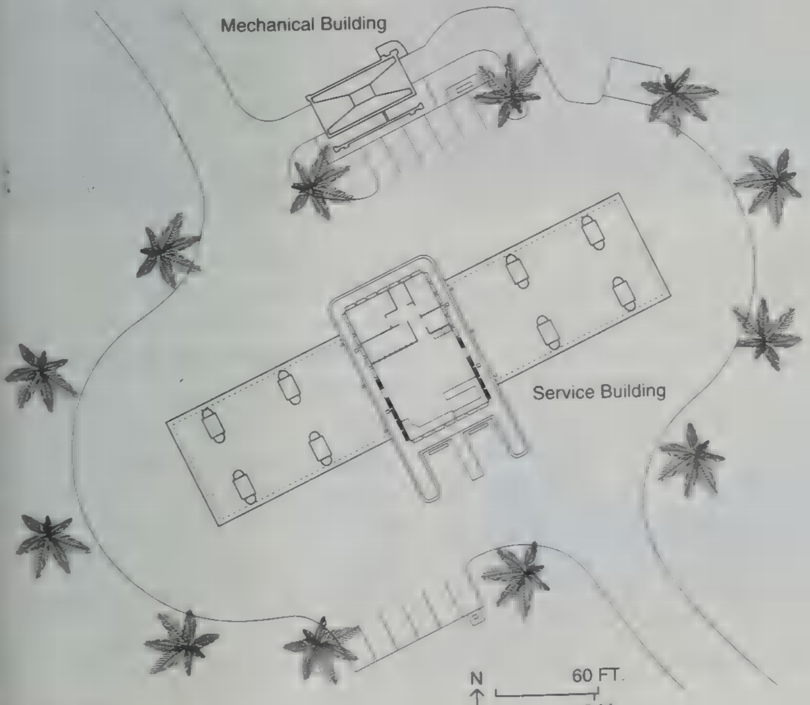




SITE PLAN

Credits
Exxon Service Station
Lake Buena Vista, Florida
Architect: *Hardy Holzman Pfeiffer Associates—Hugh Hardy, partner-in-charge; Manuel Mergal, project manager; James Brogan, Kristopher Nikolich, design team*
Architect of Record: *Orlando Alonso Architects*
Engineers: *Innovative Engineering Group (mechanical); Lace Consulting (electrical); L.B.O. & Associates (structural)*
Landscape Architect: *Ivey, Harris & Walls*
General Contractor: *B & M Construction*

Hotels Are Back, But...

Hotels are the fastest growing construction category in the U. S. right now, but not all of it offers opportunities for architects. To find commissions, they should sharpen their focus.

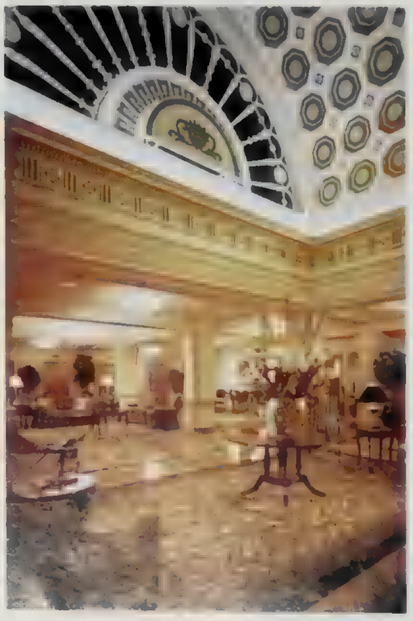
F. W. Dodge projects hotel construction up 20 percent this year—to more than 60-million sq ft. This makes the building type the fastest growing in the U. S. Of course, it had a long way to come from 1991, when it had plummeted to 14.6 million sq ft. As Hilton president Dieter Huckstein puts it: "In the mid-1980s, spending $300,000 to $400,000 [on construction] per key was not uncommon, while the average business person was only willing to spend [an unprofitable] $100 rate per night." The result, says Westin director of project management Rod Odegaard: Mortgage lenders became reluctant owners of properties constructed in an overbuilt luxury market.

Today's developers are more realistic. They focus on differing markets—including a large one for cookie-cutter economy hotels. These are often built to prototypes and offer architects little opportunity. Three other prospering markets, however, do:

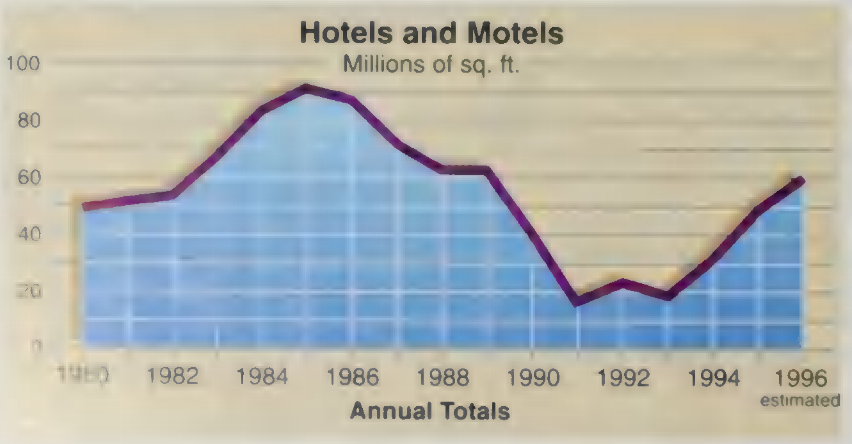
1. Luxury business hotels abroad. U. S. involvement is mainly through the major chains, which rely on brand-name recognition to attract a clientele eager for speedy service, electronic communications and meeting facilities lacking in older hotels. *Standard & Poors* cites prime opportunities in developing countries, such as Southeast Asia and the former European Communist Bloc. But architects may have to court a foreign client to get the design job. U. S. chains often operate or simply lend their names to hotels built by others. And American expertise in modern hotel design is no longer the entree that it once was, before others entered the field.

2. Resorts. Despite a seasonal nature, leisure destinations now are 36 percent of all hotel business, reports the American Hotel and Motel Association. Year-round occupancy rates of 71 percent in 1995 (vs. an all-hospitality average of 66 percent) are projected higher in 1996. This is a healthy market. To capture work in it, architects may need to indulge in some design fantasy (see Sun City photo, below). Owners and operators no longer rely on a clientele content to relax or pursue a single sport, such as golf or skiing. Now they promise "a total escape" to excitement, adventure, and romance—and often require designers to provide an appropriate fictional theme setting.

3. Renovation. Hotels spent almost $1 billion on overhauls last year and the amount is going up. Most chains are in aggressive programs. Westin alone is spending "several hundred million," claims CEO Jurgen Bartels. When big chains employ outside architects on any type of work, they generally must have a hotel-design track record. The better route to commissions for smaller architectural firms may be the boutique chains of renovators, such as the Kimpton Group based in San Francisco, with 19 hotels up and down the West Coast, and the Gotham Hospitality Group in New York City (see page 106), now working on its fifth project. These developers buy older buildings, many with architectural distinction, and turn them into small moderately priced hotels with often unconventional layouts where an architect's design creativity means more than big chains' efficiency formulas. As one architect says, "Stick with the markets where design counts." *Charles K. Hoyt*



Dan Cunningham photo



The graph (below left) tracks ups and downs of hotel construction. The most promising segments for architects in this market:

Renovation that captures past glories: *The recently opened Crowne Plaza in Washington, D. C. (top left), is Brennan Beer Gorman/Architect's makeover of a large-scale 1922 hotel stripped of detail in the 1970s.*

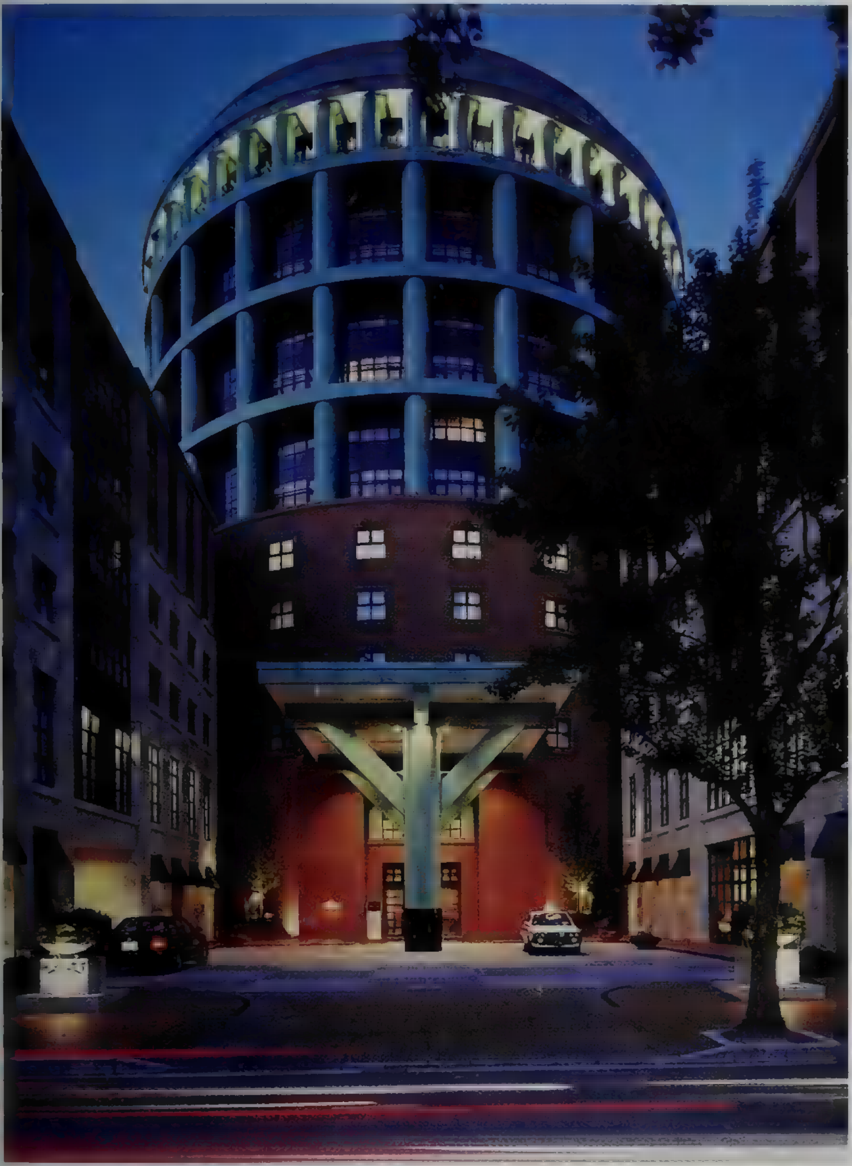
Luxury for business people abroad: *Architect Jose Cartana Gubran puts glamour into top suites outside the U. S. (bottom, left) at the new Conrad International Hotel, Barcelona.*

Fantasy environments for resorts: *In the middle of a desert, Wimberly Allison Tong & Goo summon images of the Raj, complete with a jungle-wildlife motif and man-made ocean, at the just-built Palace of the Lost City in Sun City, South Africa.*

Hyatt Regency Hotel

Fukuoka, Japan
Michael Graves, Architect
Fukuoka Jisho Company
Maeda Corporation, Associate Architects

An overtly business-oriented hotel abroad run by an American chain, the Fukuoka Hyatt is built to operate in tandem with an attached 120,000-sq-ft office building housing prestigious Japanese firms. These use the complex's 260-room hospitality component to put up visiting guests and for runover operations in conference rooms and offices that are quickly converted from sleeping quarters. Other business people from elsewhere in Japan sleep in rooms by night and convert them to do business with local companies by day. Bonuses for Hyatt are the unanticipated guests from outside Japan who stay for the same purpose, tourists who stay for the attraction of Michael Graves, Architect's spectacular building design, and the steady booking of the banquet hall for local social functions. *Continues*



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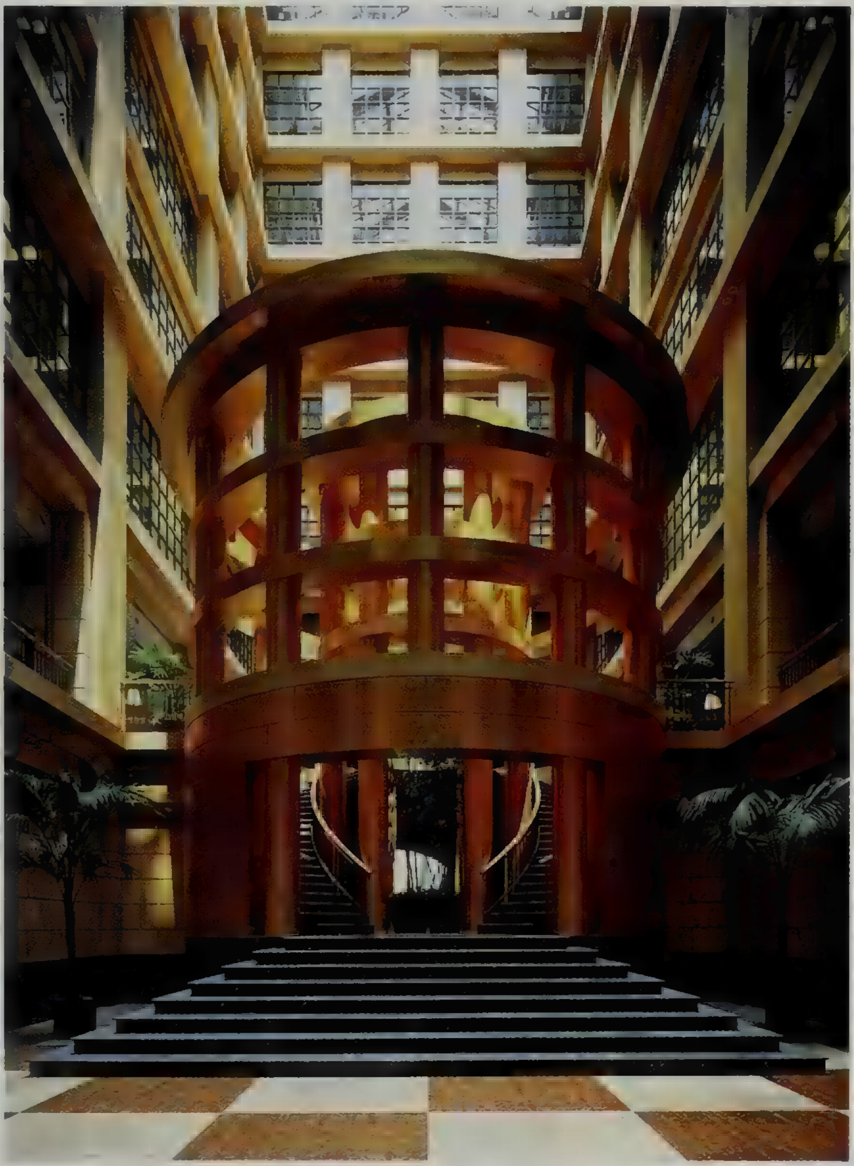

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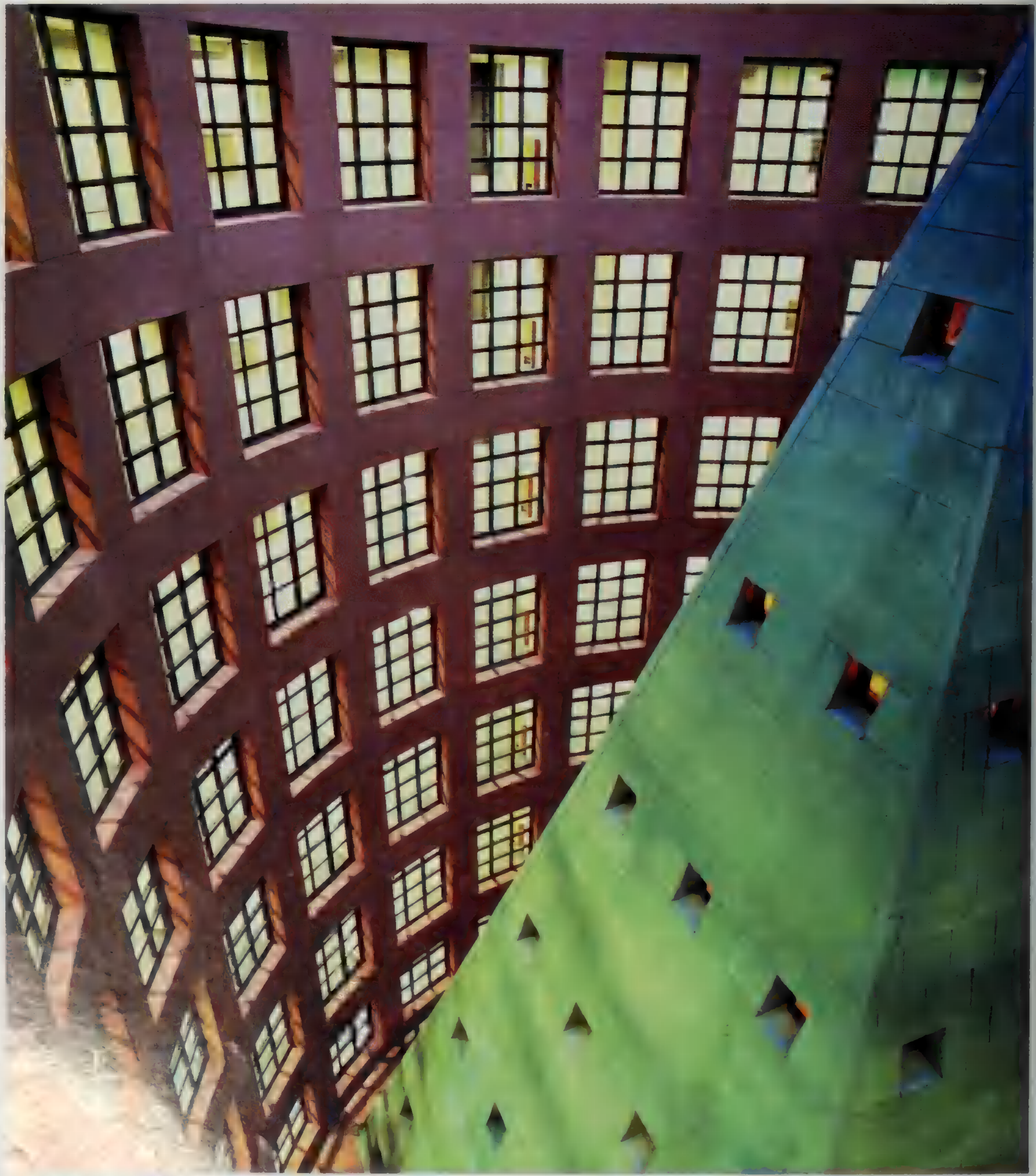
The hotel (above) and an attached office building are built on a tight linear site (plans, following pages). While the function of both buildings is essentially business, their elaborate public rooms draw constant social events. Weddings are especially popular; the bride and groom choose this location just to be photographed within the gold-leafed stair pavilion (above, right) after the ceremony.

To the Japanese user, accustomed to close quarters, the Fukuoka Hyatt is a deluxe hotel, although Americans might expect more spacious guest rooms to qualify for that description. Even their ingenious double-use layouts (plan, opposite, right) might seem overly utilitarian to Western eyes—not to mention their ability to sleep four or five people in a single room. But ship-like efficiency, rich materials, and architect-designed furniture capable of being bent to a number of tasks have much to teach us, not only about Pacific Rim expectations, but about creating a sense of luxury within the constrained economics of today's hotel development and construction.

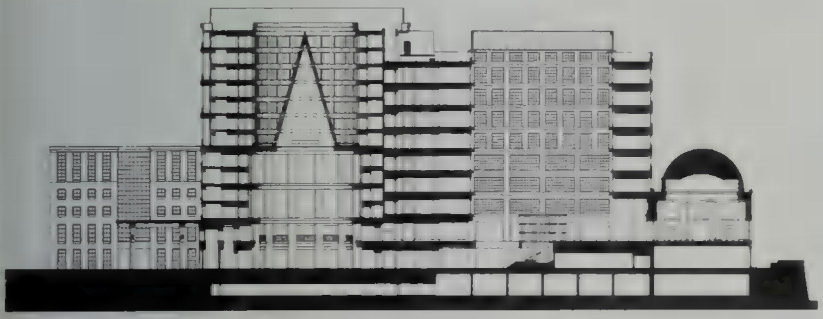
Ironically, Michael Graves and his design team put a new twist on Hyatt's typical tall atriums, although the operator was not signed up until after design. They capped the endless-seeming central void half way up its 13-story height with a copper-sheathed pyramid roof lined with gold leaf. It gives this space more defined proportions and—punctuated with small skylights (below)—gives guests in the glass-walled corridors above it the visual interest of peekaboo views inside through small ports. Fukuoka, in the south of Japan near Korea, is growing in commercial importance because of the increase in trade with the Communists. Land values have skyrocketed and Graves's team was under constant pressure to maximize site use within strict local zoning controls of height and sky-exposure planes. High land costs also drove the Japanese bank-developer, Fukuoka Jisho, to maximize potential

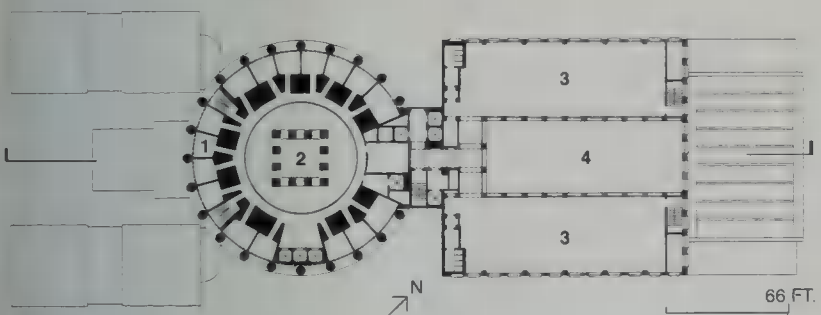


[illegible]
down [illegible]
usual [illegible]
guests on [illegible]
floors look [illegible]
sculptural [illegible]
its roof.

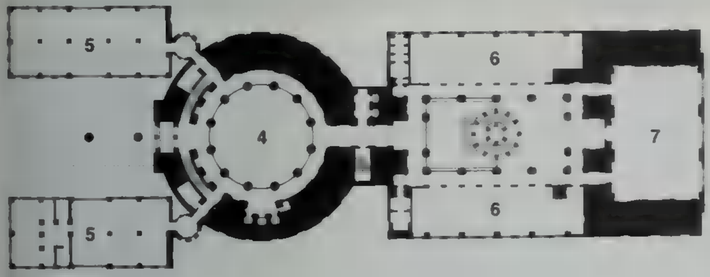
income by upgrading finishes to produce higher room and facility-rental rates. Hence, all the marble and gold leaf. The hotel exterior is clad in red sandstone. Heavy 20-oz copper sheathes the upper columns. Forecourt wings are covered in white sandstone. The structure is composite reinforced concrete and steel box beams for earthquake reinforcement. Graves's senior partner Tom Rowe credits the final design's integrity to "a respectful working relationship" with construction contractor Maeda, which also did engineering and final drawings, *and* to his own many long trips. One problem was the Japanese practice of using accustomed suppliers; after working with one company to perfect the verdigris-copper finish, the architects had to start again with another, which, Rowe reports, produced an excellent result. Would he have done anything differently? "There should have been a third auto entrance into the tight hotel forecourt, but retail use won out in its place."
Charles K. Hoyt

Credits
Hyatt Regency Hotel
Fukuoka, Japan
Owner: *Maeda Corporation*
Architect and Interior Designer: *Michael Graves—Michael Graves, design principal; Thomas Rowe, senior associate-in-charge; Patrick Mulberry, project manager; Alexey Grigorieff, job captain; Kim Armour, Wendy Bradford, Jesse Castaneda, Lorissa Kimm, Andrea Wang, project team*
Associate Architects: *Fukuoka Jisho Company, Ltd., Maeda Corporation*
Engineer and General Contractor: *Maeda Corporation*

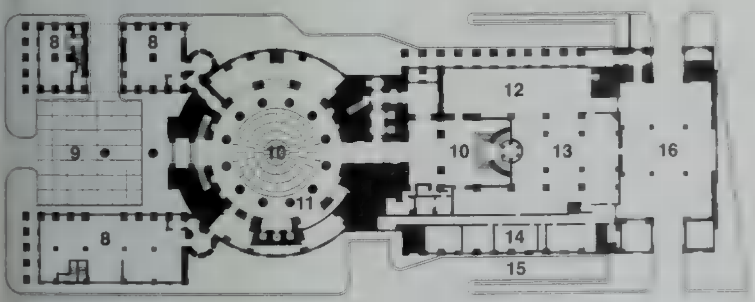

LONGITUDINAL SECTION



TYPICAL FLOOR

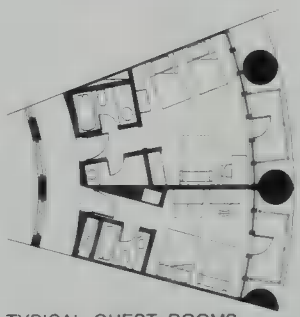


SECOND FLOOR



GROUND FLOOR

Two of many guest-room types and arrangements (plan, below) are set up to sleep a maximum number of people in beds that fold down and on convertible couches that pull out.


TYPICAL GUEST ROOMS

1. Guest room
2. Pyramid roof
3. Offices
4. Atrium
5. Business center
6. Restaurant/bar
7. Banquet hall
8. Retail
9. Entry court
10. Lobby
11. Reception
12. Cafe
13. Kitchen
14. Mechanical
15. Ramp to garage
16. Service entry

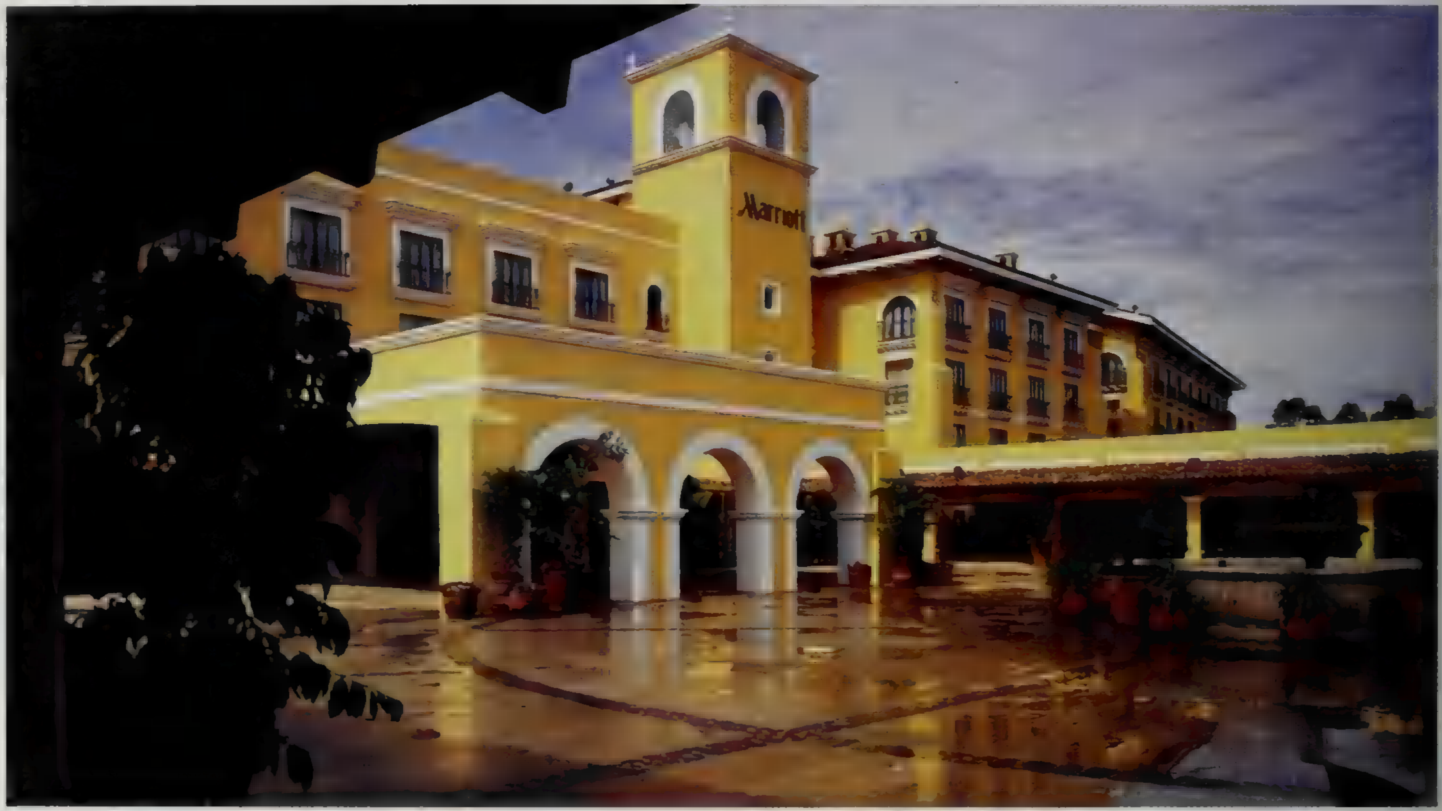
Costa Rica Marriott

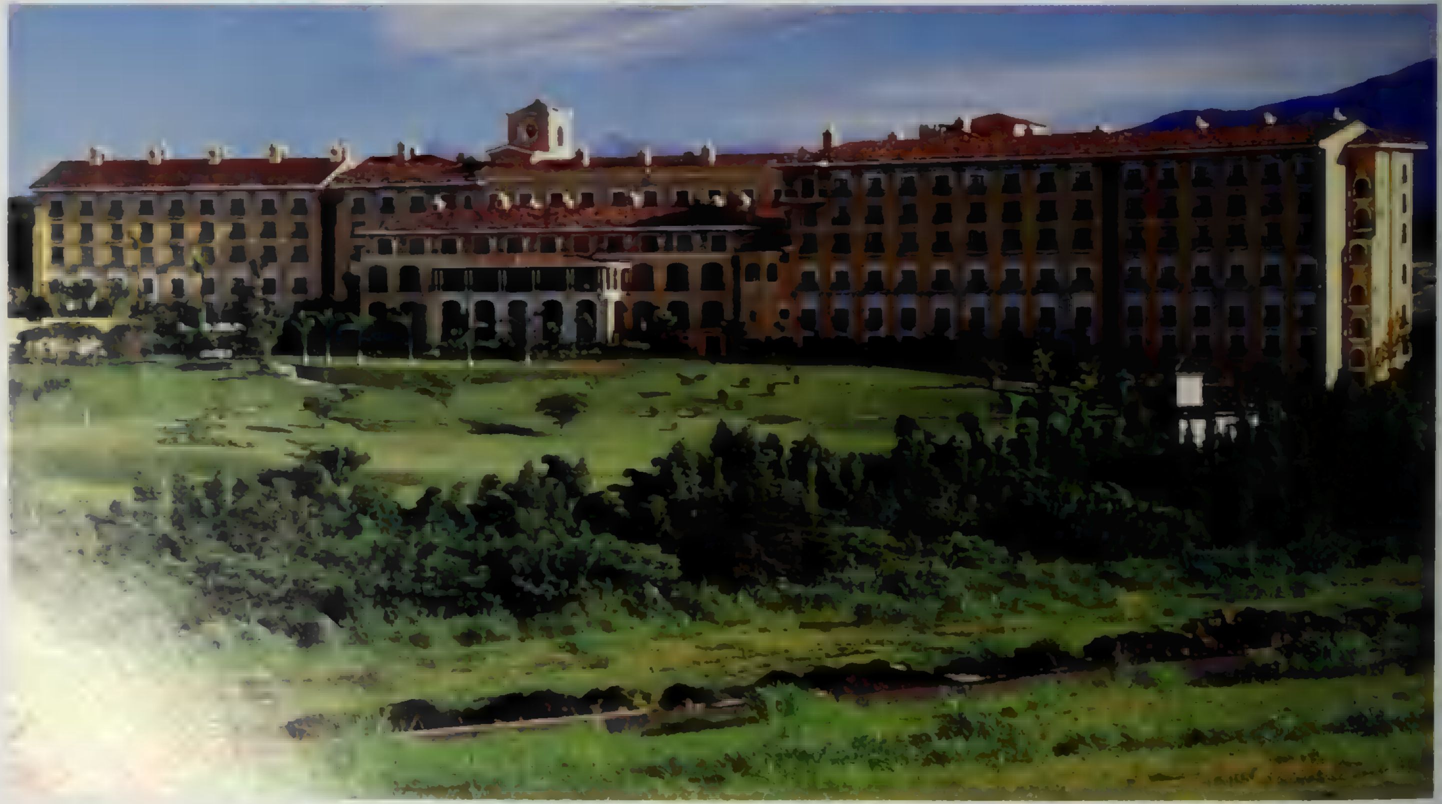
San Jose, Costa Rica
Zürcher Arquitectos
Spillis Candela & Partners
Associated Architects

Like fantasy environments offered by many current resorts, the surroundings at the just-opened Costa Rica Marriott evoke an escape to another time and place—in this case, the tropical country's colonial past. The approach is through a coffee plantation reminiscent of an era when small-scale farming was profitable and bean plants' shiny green leaves covered the countryside. The hotel's architecture too recalls history—despite modern plumbing, two swimming pools, four tennis courts, and a golf-driving range.

Unlike typical resorts' fantasy environments, this one was created for more reasons than luring guests. A wave of demolition to make way for new construction in the 1950s destroyed much of Costa Rica's colonial heritage; local developer-

Spanish colonial architecture stands in startling contrast to Spillis Candela's sleek curving facades for USAA's Tampa regional offices [ARCHITECTURAL RECORD, July, 1994, pages 56-61]. But the designers had their reasons (see text).





© John Gillan photos

builders, Guido Castro and his wife Ileana, were determined to put some of it back. There could be little question about their new building's style—as well as many of its ancient components.

Designer Aramis Alvarez, a principal in Miami-based architect Spillis Candela & Partners, spent 10 days before starting work traveling with the couple, studying Spanish colonial buildings from Guadalajara to Mexico City—measuring proportions and photographing details. Doña Ileana scoured Costa Rica demolition storage yards for authentic colonial building parts. Finds included local grey volcanic-stone portals, columns, and 5 in.-thick pavers, a monumental wooden town-house carriage entrance with pedestrian passages, and enough ancient terra-cotta barrel tile to cover the whole roof.

The new hotel was to be much bigger than any colonial-era hacienda—an effect exaggerated when Marriott came on the scene at the end of design and raised the room count from 180 to 250, requiring an extra story on the west wing and an extension of the east wing. Still, Alvarez worked hard to keep down the scale of the building, as well as to assure the best views. He located the building on an abrupt 10-ft drop in the sloping site so that the first floor of public rooms and service spaces (plans overleaf) opens to views and grounds to the south, and is buried into a hillside on the north—invisible to arriving guests. He had a platform erected where the new second-floor entry level was to be and stood on it, adjusting both building orientation and floor levels for optimal sight lines on the spot.

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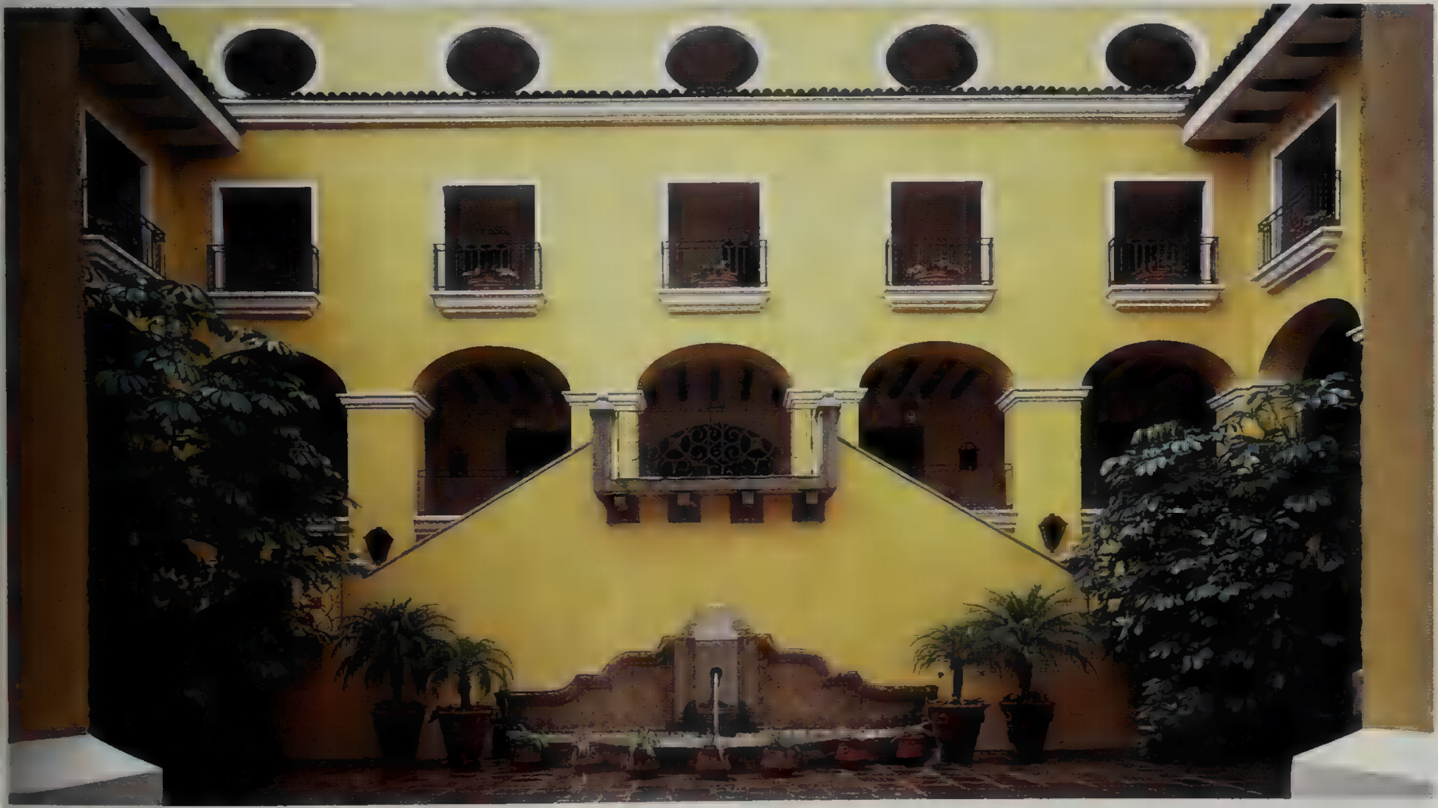
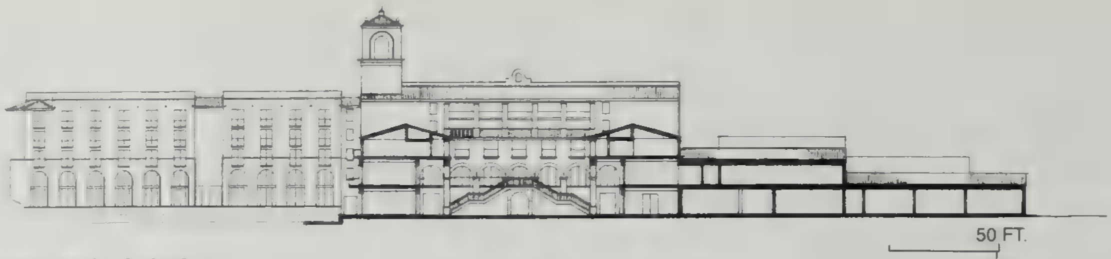
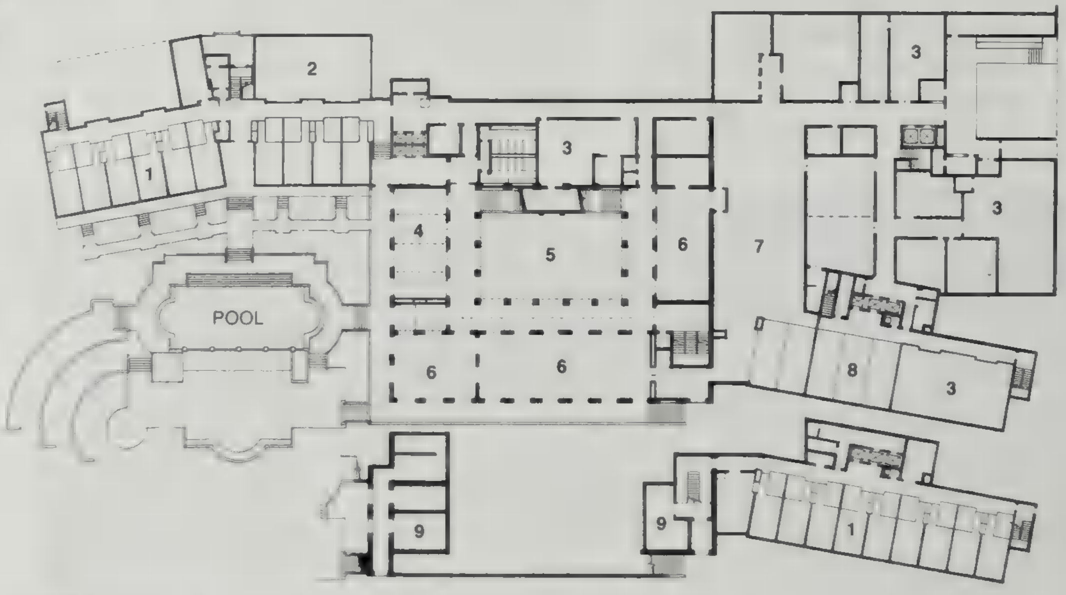


The central courtyard (left) replaces the grand lobby found in hotels in less clement climates and captures the building's originally intended scale before the west wing (opposite, left) grew by a floor and the east wing grew by a bay for Marriott.

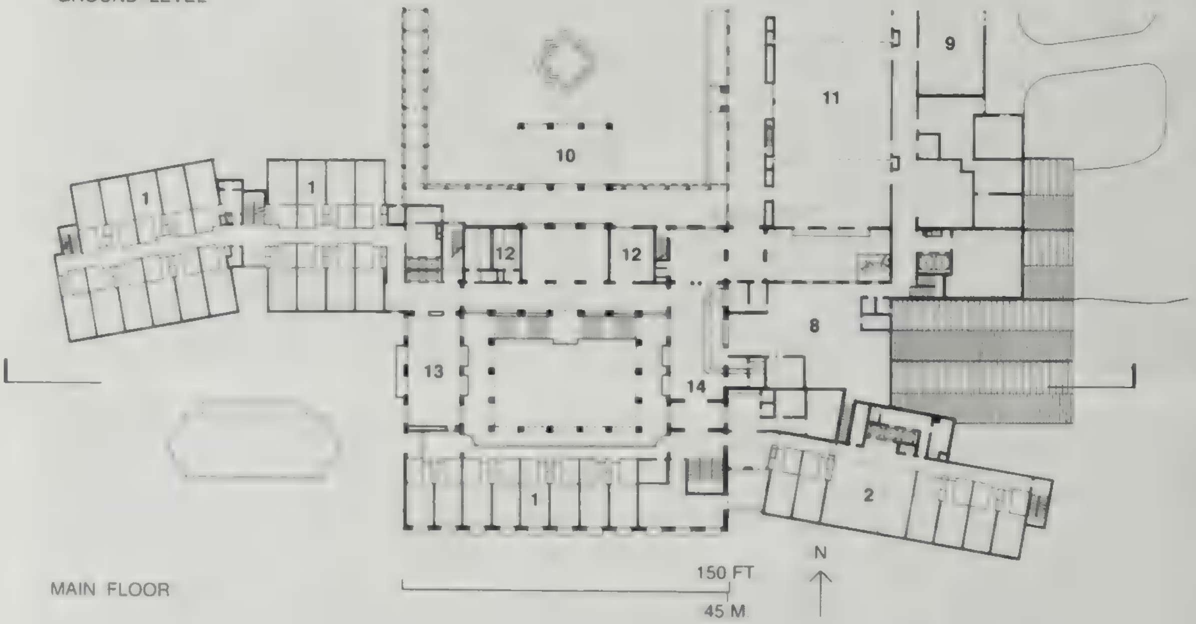
A steep slope across the middle of the site allows many of the first-floor support facilities to be buried unobtrusively under ground while public spaces on this floor face the grounds and the view to the south (plan and section, right).



EAST-WEST SECTION

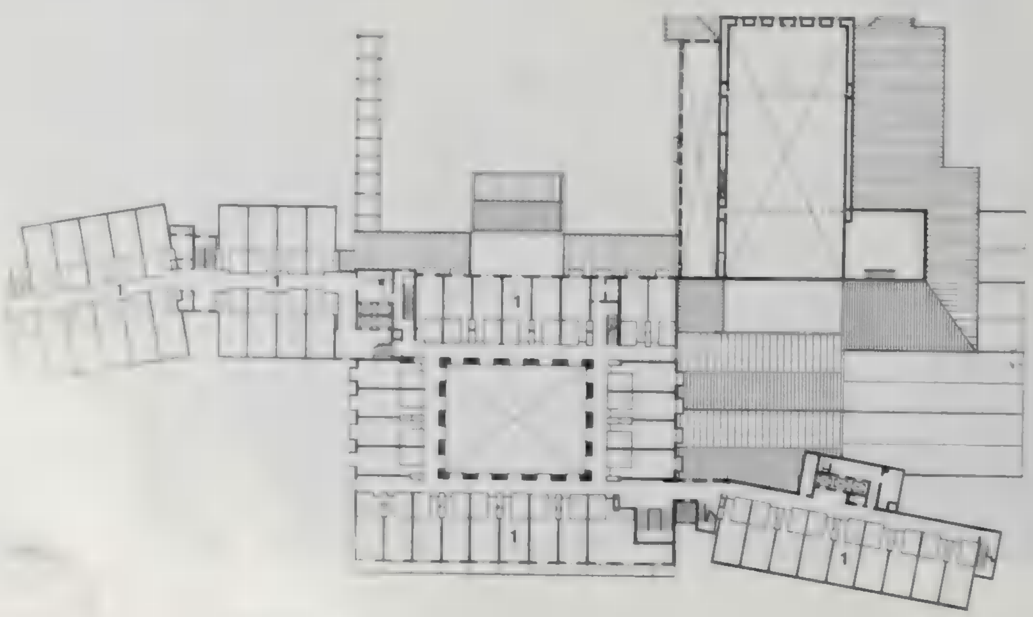


GROUND LEVEL



MAIN FLOOR

1. *Guest rooms*
2. *Health club*
3. *Maintenance*
4. *Lounge*
5. *Open courtyard*
6. *Dining*
7. *Kitchen*
8. *Administration*
9. *Mechanical*
10. *Main entrance*
11. *Ballroom*
12. *Support*
13. *Bar*
14. *Registration*

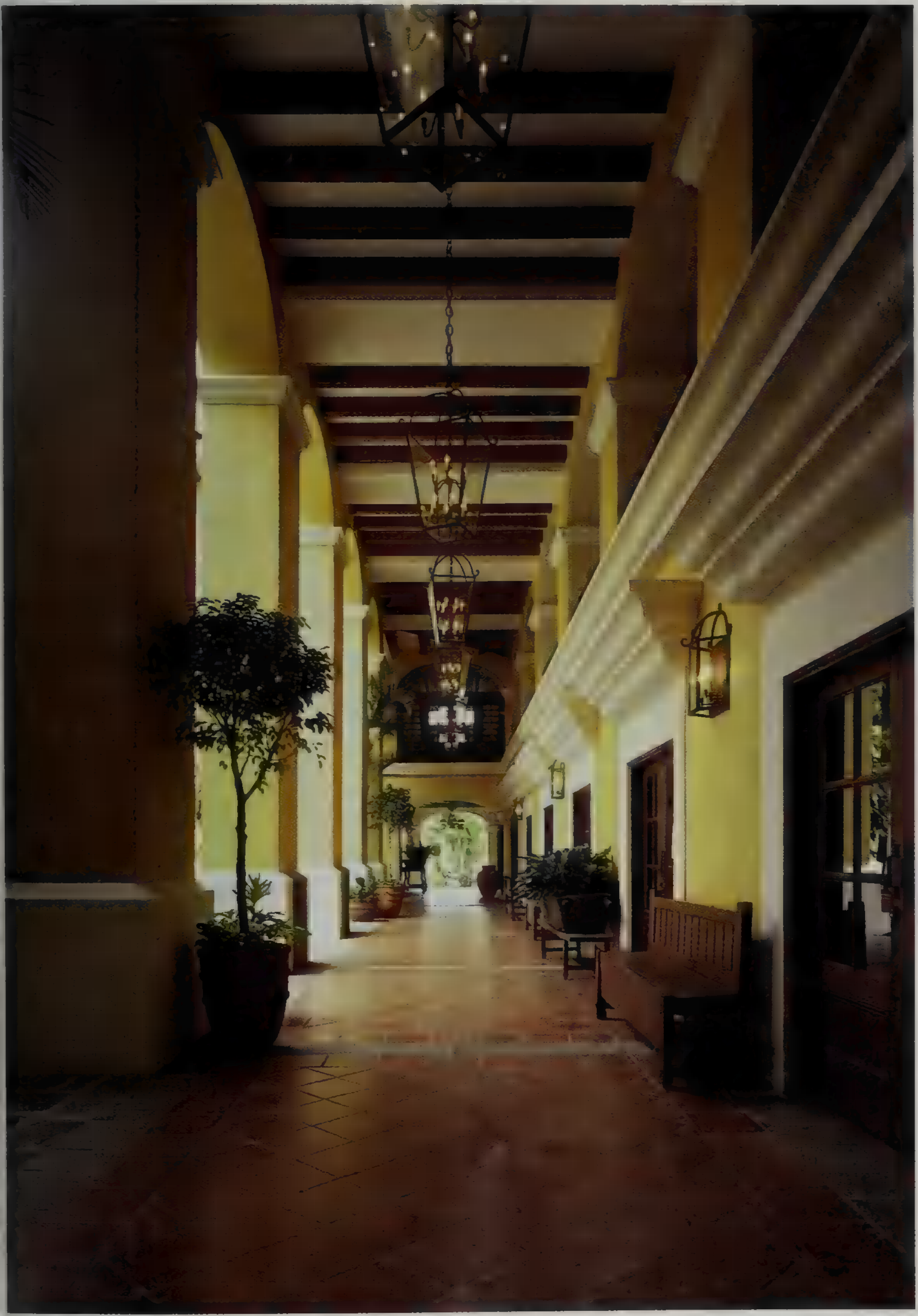


Like many resorts, this one serves several audiences—relaxed tourists, working conventioneers, and locals who use it as a social center. Hence, the architects had already designed support facilities large enough to accommodate the last-minute room-count increase.

Local architect Ronald Zürcher offered help, not only on Costa Rican building practice (he executed the construction documents), but on such traditional details as the different shapes of openings in the roof-top ventilator towers, which carry bathroom exhausts and break up the large expanses of tile. Engineers Franz Sauter & Asociados developed the earthquake-resistant egg-crate concrete structure—in effect, a huge truss in which the structure around each room acts as a member. Sections of the building are isolated by construction joints that allow them to move independently. The roof, according to local custom, is steel joists covered with corrugated metal, then plywood, and finally tile. *Charles K. Hoyt*

Credits

Costa Rica Marriott
San Jose, Costa Rica
Owner: *Marriott Hotel Corporation*
Associated Architects: *Zürcher Arquitectos, S. A.—Ronald Zürcher, architect of record*
Spillis Candela & Partners, Inc.—Aramis Alvarez, partner
Engineers: *Franz Sauter & Asociados (structural); Cañas y Sequeira (mechanical, electrical)*
Consultant: *Edward D. Stone & Associates (landscape)*
General Contractor: *Gálvez y Volio Asociados, S. A.*



Benches, paving, lintels, and door frames have been recycled from colonial-era structures (colonade left and lobby above). Artisans have replicated the period detailing in plaster (left).

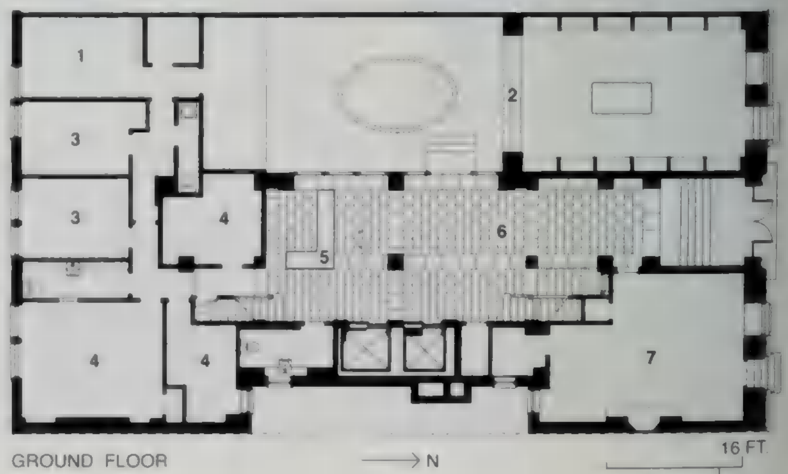
Hotel Mansfield

New York City
Pasanella + Klein/Stolzman + Berg Architects

"It turned out to be much more of a restoration job than we expected," says Henry Stolzman, of Pasanella + Klein/Stolzman + Berg Architects. The ornate 1902 building had been designed as rooms for affluent bachelors. When Stolzman started work, these generous spaces on the upper eight floors were intact, while the lobby floor seemed so cleanly swept of Beaux-Arts detail during a 1960s alteration, it appeared to belong in a different building. But, as drywall and suspended ceilings came down, layer after layer, the original lobby emerged from behind—complete with much of its molding and even small single-bulb ceiling lights. Stolzman, who did two previous hotel conversions, was pleased. He had not been relishing the difficult task of melding period feeling and 1990s sensibilities in a total redesign.

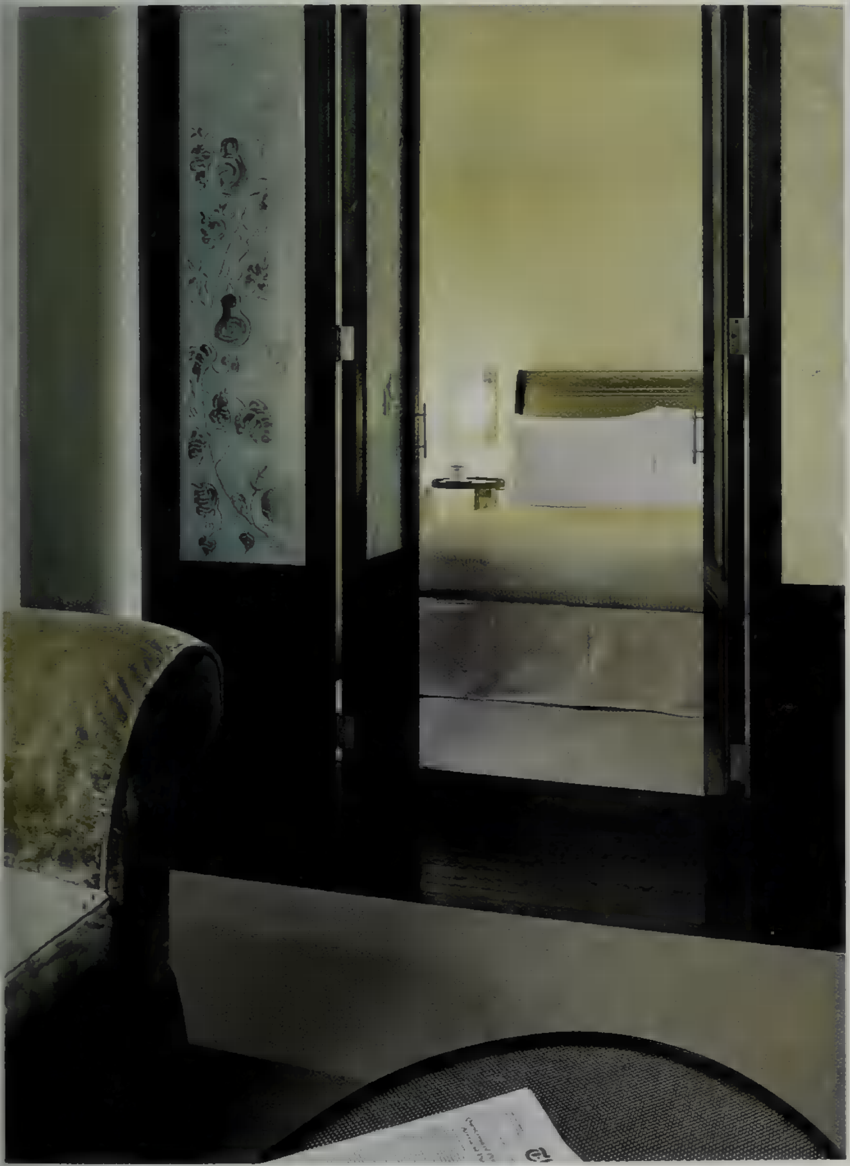
© Michael Moran photos

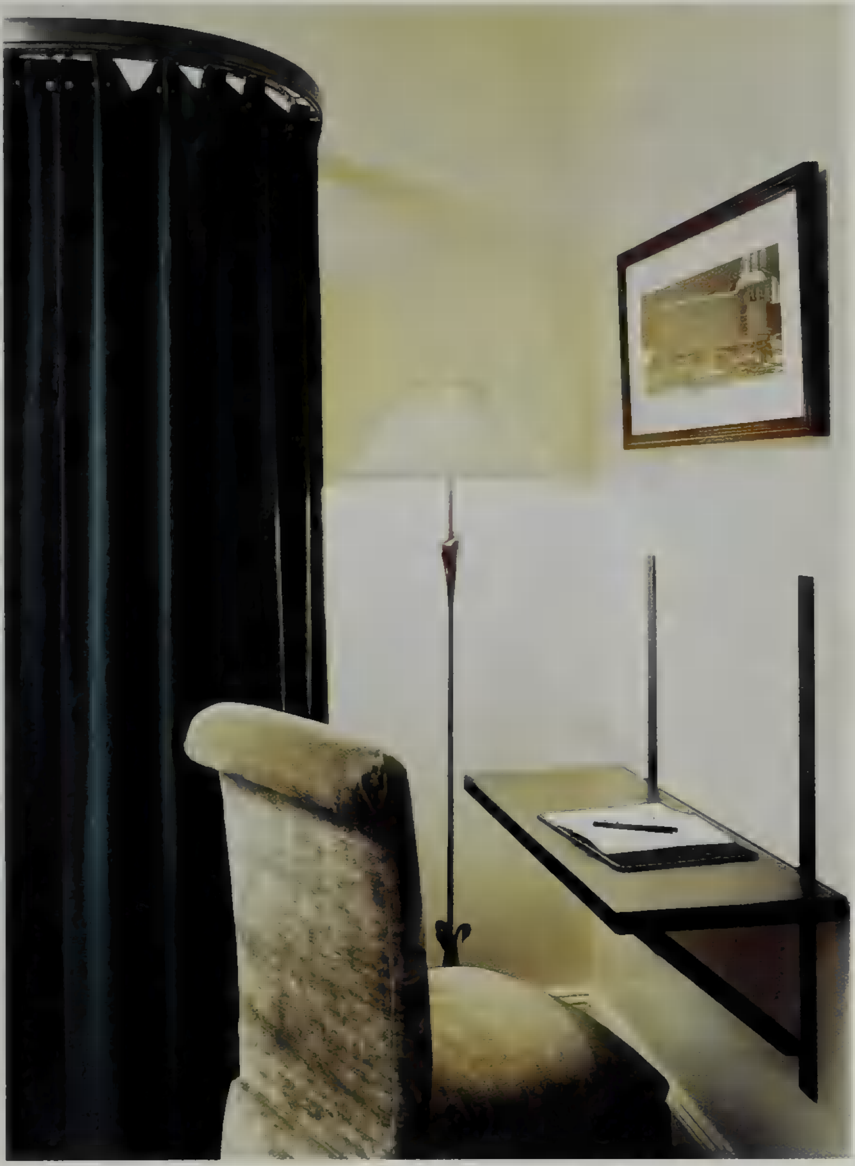
The location is a side street just emerging from many garish latter-day alterations near Times Square. Ground-floor stonework (above) had been hidden by the [illegible] plas[illegible] fast-food [illegible] either side of the [illegible] which it [illegible] massive [illegible] copper [illegible] with a [illegible] bright color, which enlivens the north-facing facade. The reception lobby (above, right) has walls of polished plaster lit by can fixtures recessed in the new Bulgarian limestone floor. Many of the furnishings are found objects, including Philippine 1950s furniture in the adjacent [illegible] (plan). This space offers a [illegible] atmosphere in a [illegible] toward the street [illegible] small concerts.

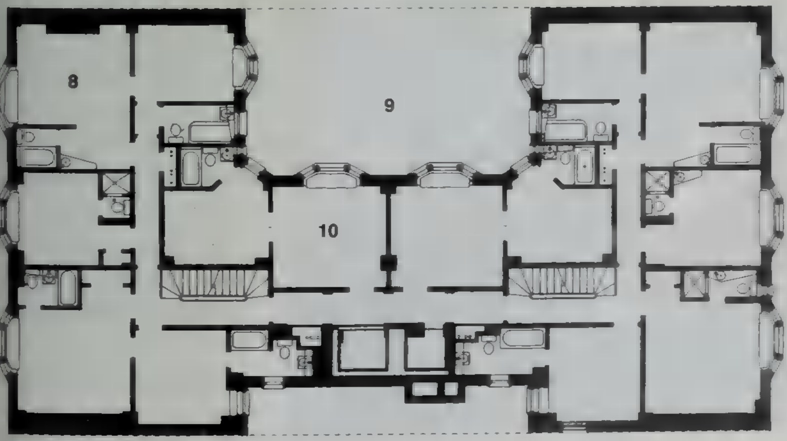


The owner, Gotham Hospitality Group, caters to guests seeking up-scale accommodations at moderate prices and has found the economies of renovation the best route to filling that role. This client is its own general contractor and knows costs. Both client and architect understand those aspects of preservation that make functional and economic sense. In the Mansfield's case, the lobby and the rooms upstairs survived. The benefits were twofold. First, despite the need to install new plumbing and wiring, the basic fabric of the building did not have to be replaced—nor did much of the wood flooring and room trim. Bathrooms were given new life by reglazing big, heavy cast-iron tubs and other period fixtures, originals of a style now copied by manufacturers at great cost. The other benefit of using the original plans was the ability to retain such existing conditions as the unusual emergency egress patterns (plan below) that would otherwise have to be altered in new construction. Still, there was ample ingenuity of design: Aside from turning undesirable rooms into airy suites (photo below, left), the architects created duplex penthouses from former storage lofts on the ninth and tenth floors.
Charles K. Hoyt

Credits
Hotel Mansfield
New York City
Owner: *Gotham Hospitality Group*
Architect: *Pasanella + Klein/ Stolzman + Berg Architects—Henry Stolzman, Tim Witzig, Jonathan Schecter, project team*
Engineer: *Jack Green Associates (MEP)*
Consultant: *Johnson Schwinghammer (lighting)*







SECOND FLOOR

1. Kitchen
2. Lounge/breakfast
3. Storage
4. Office
5. Reception
6. Lobby
7. Video/coffee/ conference
8. Guest room
9. Light well
10. Suite

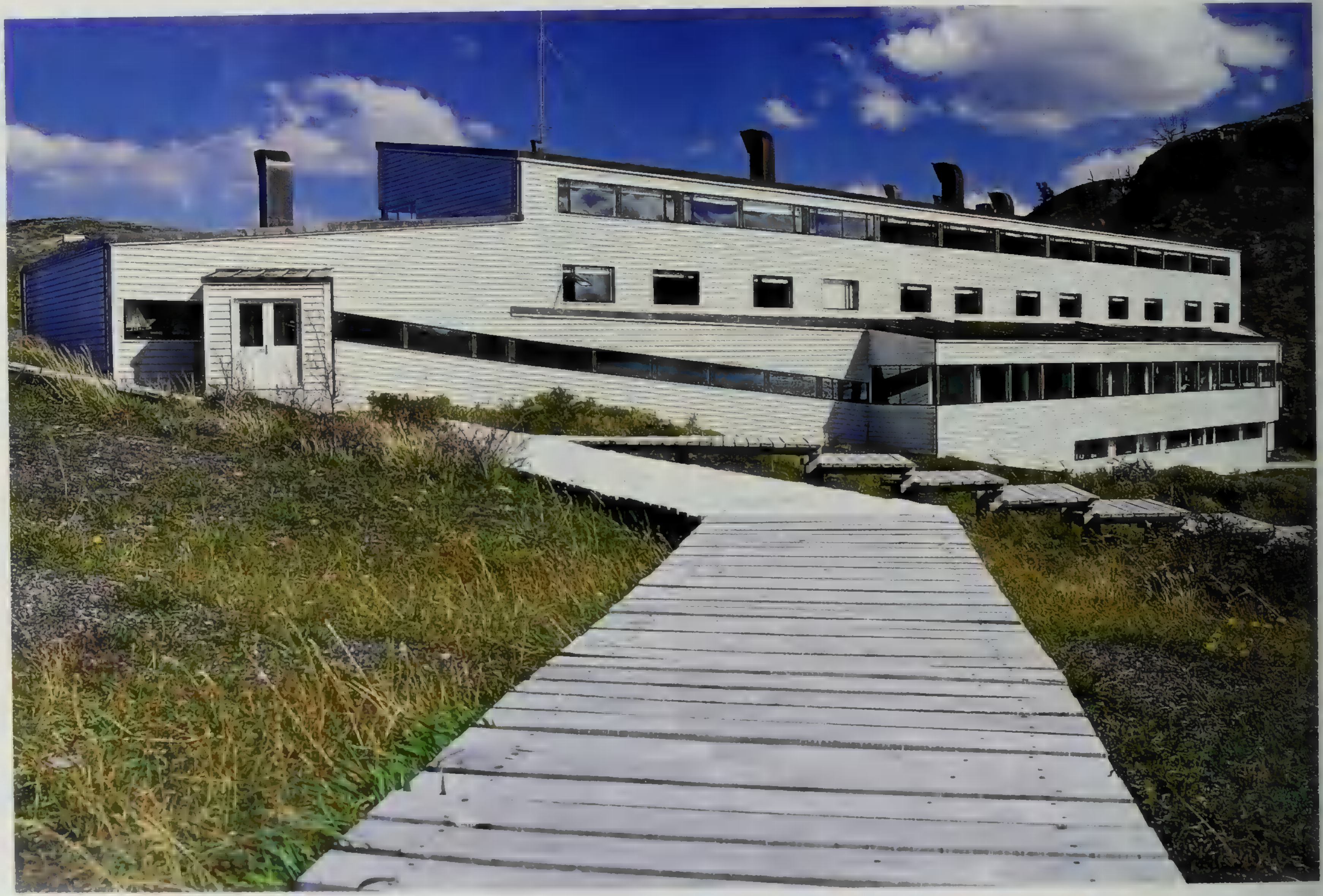
The architects created suites (center of plan, left) by combining large guest rooms facing the central light well with small once-dark rooms in the corners (above, left). Existing floors were stained black. Furniture designed by the architects includes a convertible nightstand-desk (above) found in typical guest rooms. Beside it is a curtained circular closet holding clothes, suitcases, and a TV-stereo unit.

Hotel explora

Patagonia, Chile
Germán del Sol & José Cruz O. Arquitectos, Architect

When in Patagonia, don't try competing with the scenery. An avid outdoorsman, Chilean architect Germán del Sol knew his Hotel explora in the middle of the Torres del Paine National Park in the remote southwest of his country would have to defer to its setting: majestic horn-shaped peaks, glacier-fed lakes, and lush lenga-wood forests (photo bottom). So he designed the 30-room luxury hotel as if it were a ship resting lightly on sometimes stormy seas. Indeed, weather in the park can be unforgiving with winds often reaching 70 miles per hour. Simple, rugged forms work best in this climate.

Rather than trying to blend the hotel into its setting, del Sol followed the example of the ancient Greeks who designed their temples as counterpoints to nature. "We didn't want to tame nature,



To preserve the untamed spirit of Patagonia, "there's an intermediate space [illegible] [illegible] [illegible] [illegible] pool [illegible] side of [illegible] [illegible] [illegible] no [illegible] yard

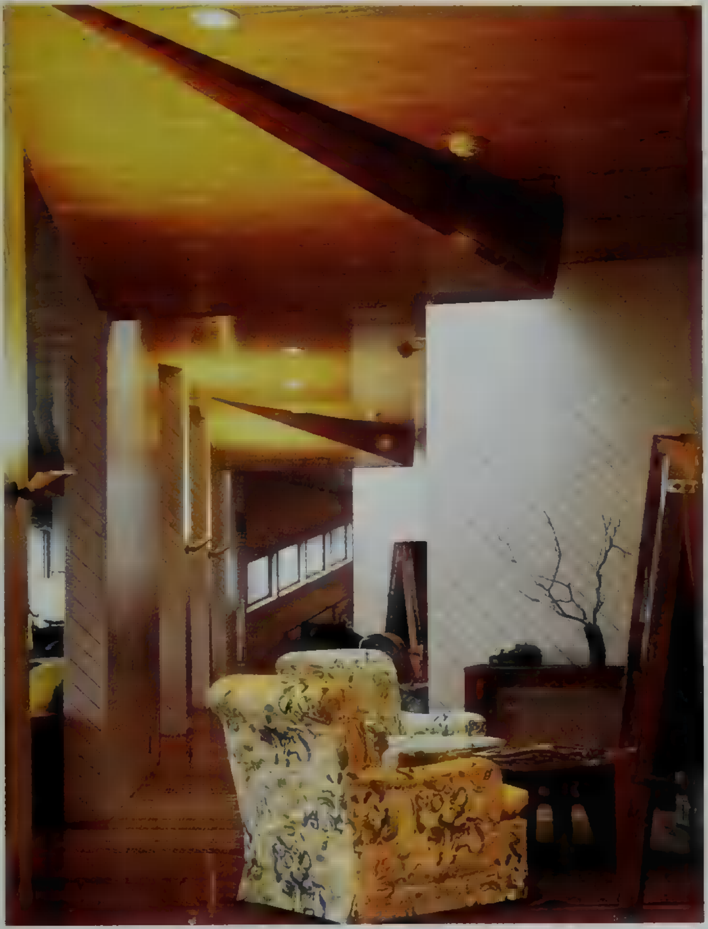
Polished wood and clean lines give interiors the feeling of a yacht. The main public spaces (opposite left) cascade down a series of steps and ramps. Windows in the pool building offer views to those who are swimming or standing (opposite right).

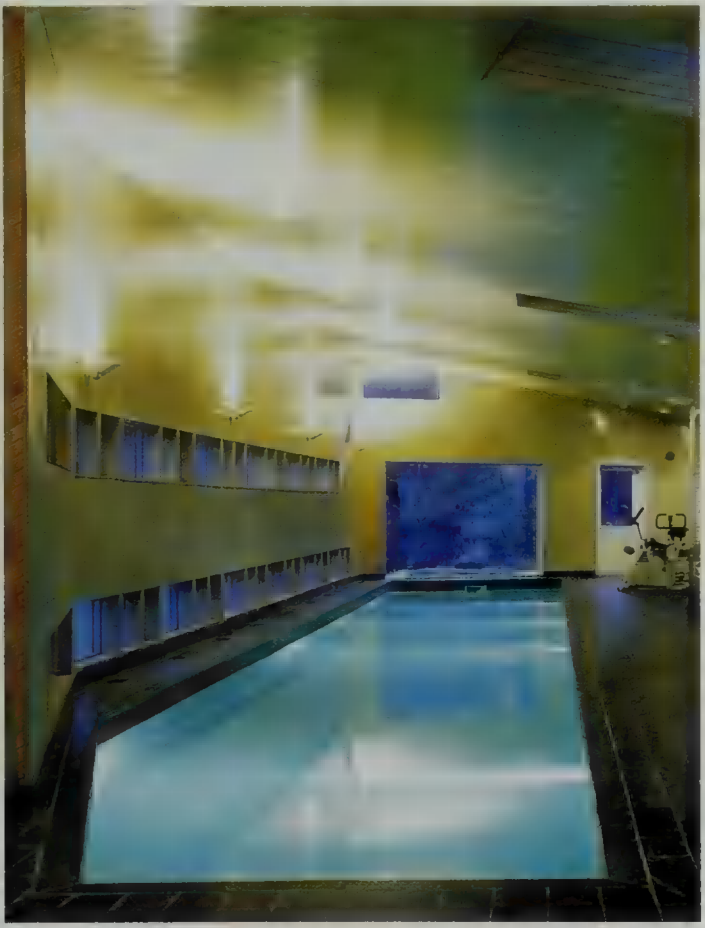
but to create a clear distinction between the man-made and the natural," explains del Sol. Providing access to the wilderness, while offering a luxurious refuge, is what the Hotel explora is all about. The first of what is hoped will be a small group of hotels in remote parts of Chile, the explora in Patagonia offers guests a variety of guided treks by foot, boat, van, horse, and mountain bike.

To minimize damage to the terrain, the hotel is a series of small structures: a one-story pool house, a service building, and a main building with two floors of guestrooms, a public floor with lounges, bar, and dining, and a lower level with reading room and staff quarters. Connecting the buildings to each other and to Lake Pehoé are boardwalks raised above the ground to protect the native flora.

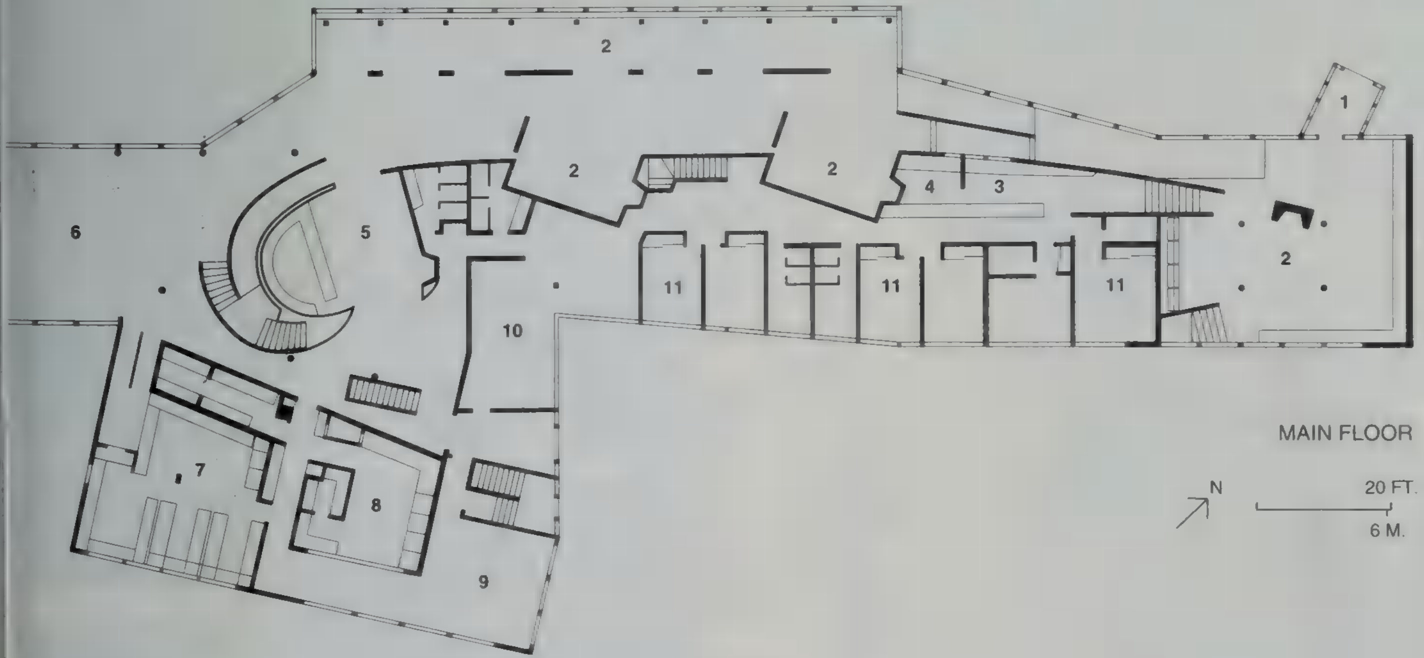
The buildings are concrete-frame structures with poured concrete slabs and even concrete walls between guestrooms (for privacy). Exterior cladding is laminated pine, while inside lenga wood and cypress were used. Because the best views face north (the direction of the sun in the southern hemisphere), the double-glazed windows were kept small. But del Sol adjusted the height of the windows during construction so all would frame views. *Clifford A. Pearson*

Credits
Architect: *Germán del Sol & José Cruz O. Arquitectos—German del Sol, partner-in-charge; Patricio Parada, Horacio Schmidt, Juan Purcell, Carlos Venegas, Hernán Fierro, Jorge Schmidt, project team*
Interior Designer: *Ana Paz Turell*





1. *Entry*
2. *Lounge*
3. *Reception*
4. *Administration*
5. *Bar*
6. *Dining*
7. *Kitchen*
8. *Laundry*
9. *Staff dining*
10. *Staff lounge*
11. *Staff bedroom*



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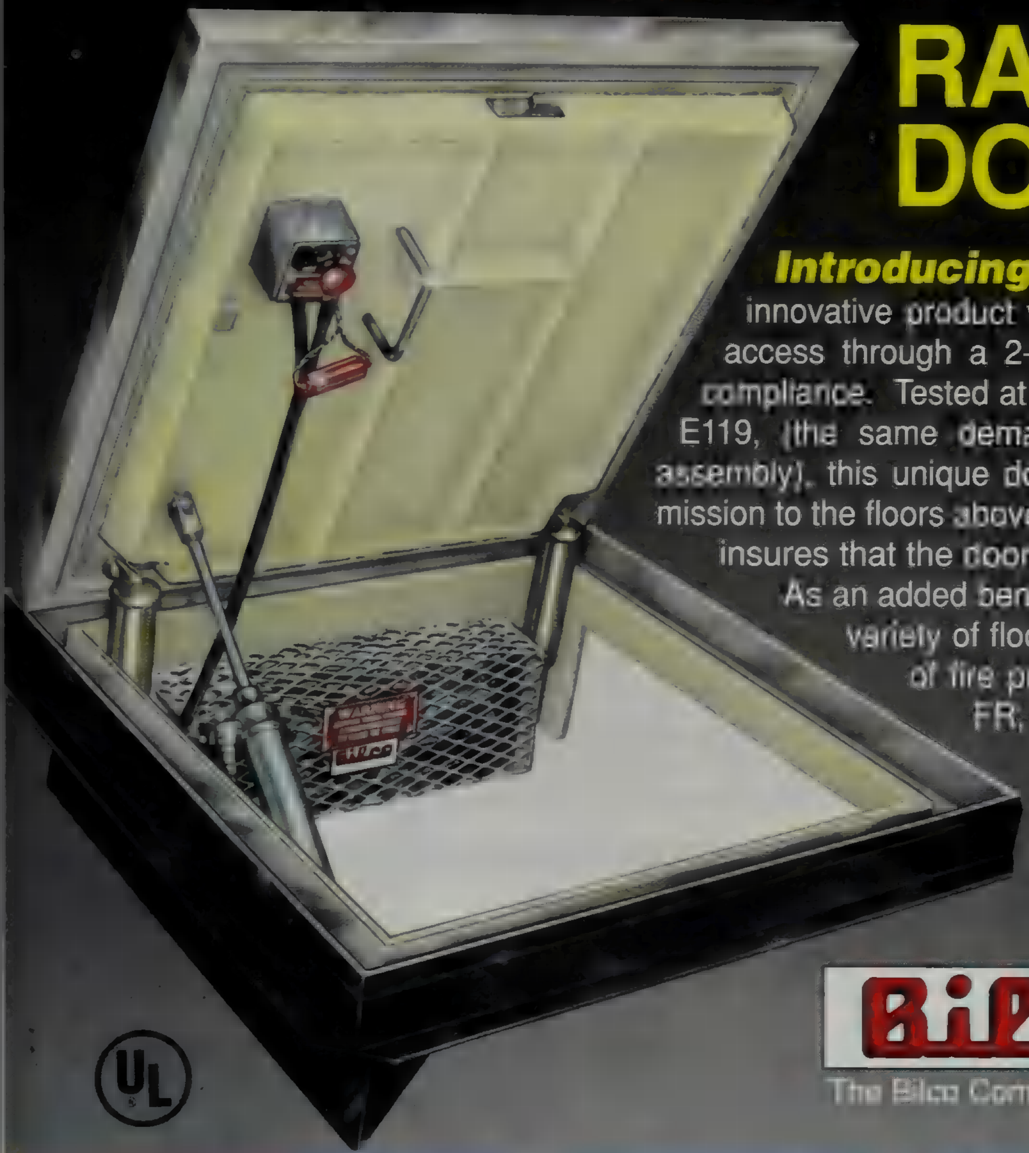

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***Photo B...**Composite cover design with fire proof coating.*

***Photo C...**Cover recess accepts custom floor covering.*

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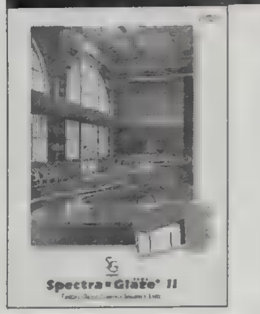
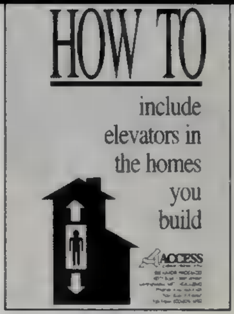


197. Glazed concrete masonry
A color portfolio illustrates the design versatility, structural performance, and decorative appeal of factory-glazed concrete masonry units for interior and exterior wall construction. All standard colors shown; custom colors may be ordered. There are design and installation videos available. 410/837-0720. The Burns & Russell Co., Baltimore.

198. Site furnishings
Landscape Forms's 1996 catalog has 20 pages on seating, site amenities, planters, benches, and umbrellas. Indoor and outdoor materials include powder-coated metal; hard maple, jarrah, redwood, and red oak; and fiberglass and Polysite, a graffiti-resistant composite made of recycled HDPE. 800/521-2546. Landscape Forms, Inc., Kalamazoo, Mich.

199. Halogen pendants/sconces
A color brochure displays contemporary-style decorative interior lighting, including Gemini, Crescent, Blue Ice, Dazzle, Mono Points, and Lytejack pendants and sconces. Light-source options include line-voltage and low-voltage halogen and krypton lamps. All UL-listed, many fixtures are ADA-compliant. 800/223-0726. Lightolier, Inc., Fall River, Mass.


HOW TO
include elevators in the homes you build
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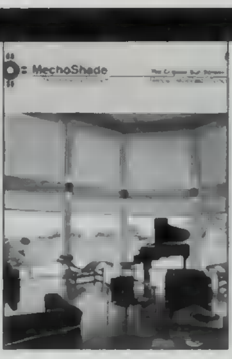
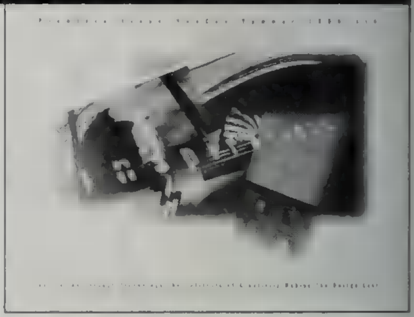
200. Pre-planning elevators
A concise booklet explains the cost, construction, and equipment parameters required for several types of home elevators, and illustrates how to accommodate hoistway, loading, electrical, and access requirements for a future elevator when designing a multilevel home. 800/825-1220. Access Industries, Inc., Grandview, Mo.

201. Architectural metal doors
Prefabricated glazed and solid-face doors can be specified in stainless and galvanized steel or Muntz metal in any of 20 standard embossed or abraded surface-design options. Sections show stile-edge, vision-light, and door-bottom details. 805/684-8626. Forms + Surfaces, Santa Barbara, Calif.

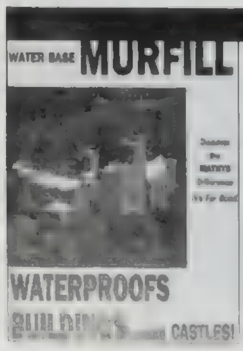


202. Sun-screening system
Catalog illustrates manual, motorized, and computer-operated sun-shading installations in commercial, residential, and institutional applications. Shading can conform to any glazing configuration, including dome skylights and large atriums; shadecloths permit a range of visibility and glare-control options. 718/729-2020. MechoShade, Long Island City, N.Y.

203. High-performance concrete
A product brochure describes different concrete additives and how each improves the compressive strength, set time, and freeze-thaw durability of concrete materials. Case studies of plant buildings, high-rise structures, and hotels demonstrate how admixtures benefited the concrete-design needs of each project. 800/321-7628. The Euclid Chemical Co., Cleveland.

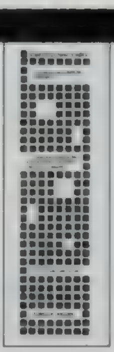


204. Designing with carpet
A new quarterly for architects and interior designers, *Inspirations* describes how nature and the built environment interact in the designs of individual practitioners. The inaugural issue profiles The Cranbrook Academy of Art and Nila Leiserowitz, Design Director with Gensler/Santa Monica. 800/241-4826, x8657. Milliken Carpet, LaGrange, Ga.

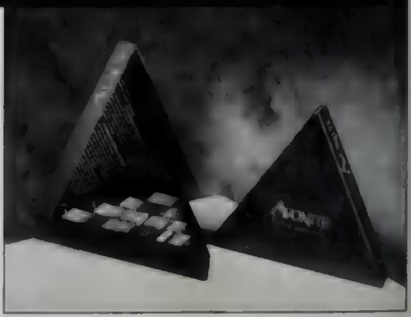


205. Waterproof building skin
A [illegible] coating, [illegible] while [illegible] faces [illegible] tion, it can [illegible] similar [illegible] little [illegible] substrates. [illegible] Coating Technology [illegible]

206. Wood-slat ceilings
The Rulon system consists of planks, grilles, cubes, and squares of natural wood installed using an unusual clip-rail method that does not need visually obtrusive cross rails. The ceiling's good acoustical performance can be improved with fiberglass-batt backing. All styles can be specified Class [illegible] species available. 800/227-[illegible] Co., Souderton, Pa.



207. A/E/C publication index
The ArchiText Construction Index references over 50 architectural, interior design, construction, and industry- and material-specific journals annually. Articles are organized by the appropriate CSI section. Available in print, an on-line search capability is planned. Homepage gives a sample search; call 312/939-3202 for address. ArchiText, Chicago.

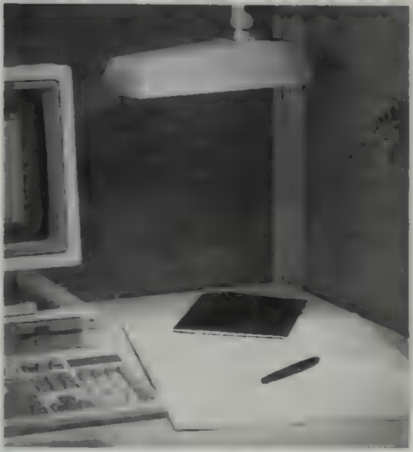


208. Solid-surface sample kit
A new program for architects and designers supplies 2-in.-square samples of all 45 current colors available in Avonite solid-surface material. Product updates, installation tips, and performance data can be referenced at www.avonite.com (Web page). 800/428-6648. Avonite, Belen, N.M.

Continued on page 119

[illegible]

169. UL-listed deck insulation
Foamular Thermapink can be installed directly over unperforated steel roof decks. Tested under Underwriters Laboratories' new intermediate-scale test for the fire performance of roof assemblies, these insulation boards do not need a thermal barrier, such as gypsum board or perlite, to meet ICBO, BOCA, and SBCCI codes. Made using a Hydrovac process said to impart a smooth, impact-resistant skin surface and a tight, closed-cell structure, Foamular extruded polystyrene is said to be "virtually impervious" to water and moisture absorption. Its R-value will not degrade over time. 800/GET-PINK. UC Industries/An Owens Corning Co., Toledo, Ohio.



170. Adjustable task light
With a magnetic mounting base that allows the fixture to be positioned anywhere under an above-desk shelf, the Adjusta-Shelf light can also tilt and swivel to direct light where needed—onto source documents or telephone dial, for example—without washing out a computer screen. Unit takes an 18W compact-fluorescent lamp behind a parabolic louver that shields the bulb even when the fixture is at eye level. Housing measures 14 1/2 in. long. 800/345-9103. Dazor Manufacturing Corp., St. Louis, Mo.

171. Cast-limestone planters
Longshadow planters, such as the Lake Forest and Lake Bluff models shown above, include designs based on the horizontal lines and stylized plant and Celtic motifs used by Frank Lloyd Wright and other members of The Prairie School. Units are made of a frost-proof, hand-cast reconstituted limestone, said to look and weather just like carved stone. Standard finish is Buff Indiana; custom "aged" patinas and ornamentation can be specified. Sold primarily through design professionals, a trade-price list is available. 618/893-4831. Classic Garden Ornaments, Ltd., Pomona, Ill.

172. Communication interface
CAS (Communication Activation Series) devices snap into all Wiremold low-profile, baseboard-like raceway systems, Tele-Power poles, and many surface- and flush-mount boxes. Inserts and faceplates come in ivory, gray, and white to match the surrounding raceway. Devices provide a common interface for low-voltage unshielded twisted pair, shielded twisted pair, coaxial, and fiber-optic cables; an integral recess allows for labeling each jack location. 800/451-3683. Interlink Technologies, A Wiremold Co., Bristol, Ct. ■

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Manufacturers' Sources

For your convenience in locating building materials shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 70-77

Washington State History Museum
Tacoma, Washington
Moore/Andersson Architects
Lead-coated copper roof: Overly Manufacturing Co. Aluminum-panel cladding: custom by architects, fabricated by McKinstry/Roberge. Brick: Denver Brick. Precast pavers: Custom Concrete Casting. Aluminum-framed windows: Custom Window Co. Entrance: Stephen Enterprises. Pulls, locksets, and operating hardware: Corbin Russwin Architectural Hardware. Acoustic ceiling: Celotex. Maple veneer paneling and cabinetry: Master Millwork, Inc. Laminate surfaces: Formica Corp. Paints: Parker Paints. Coatings on metal: Tnemec. Exhibit-space carpet: Lees Commercial Carpet (Sisalcraft). Elevators: Otis. Signage: A.S.I. Exterior and interior uplighting: Elliptipar, Inc.

Pages 88-93

Tokyo Church of Christ
Tokyo, Japan
Maki and Associates, Architecture and Planning, Architects
Steel-truss curtain wall: fabricated by Hagiura Kogyo. Sash: Nihon Steel. Fiberglass-interlayer shoji glass, frit glass, and vision glazing: Figla Company, Ltd. Chandelier fixtures: custom design by Maki & Associates, fabricated by Yamagiwa.

Pages 94-97

Exxon Service Station
Lake Buena Vista, Florida
Hardy Holzman Pfeiffer Associates, Architect
Storefronts: Kawneer Co., Inc. Aluminum louvers: Valiant Products, Inc. Corrugated-steel roof: MBCI (M Panel). Vinyl lattice: Cross Industries. Metal-halide fixtures: Hubble (Sports Liter). Fluorescent floodlights: Legion Lighting.

Pages 106-107

Hotel Mansfield, New York City
Pasanella + Klein Stolzman + Berg Architects PC, Architect
Restoration of original masonry and metal elements: Hanif Decorating. Custom woodwork: Thomas Meyn, Hopper Cabinetry. Paints: Benjamin Moore & Co. Reception desk: Fabricated by Patrick Mackin. Limestone flooring (lobby): Paris Ceramics. Art Glass panels (guest suites): Denise Amses. Shelf/desk: Chatham Installations. Custom lighting: Don Kainen. Architectural metalwork: Studio Source (metal-mesh dome); Anthony Carta Specialty metals (ironwork at elevators); Lost City Arts. ■

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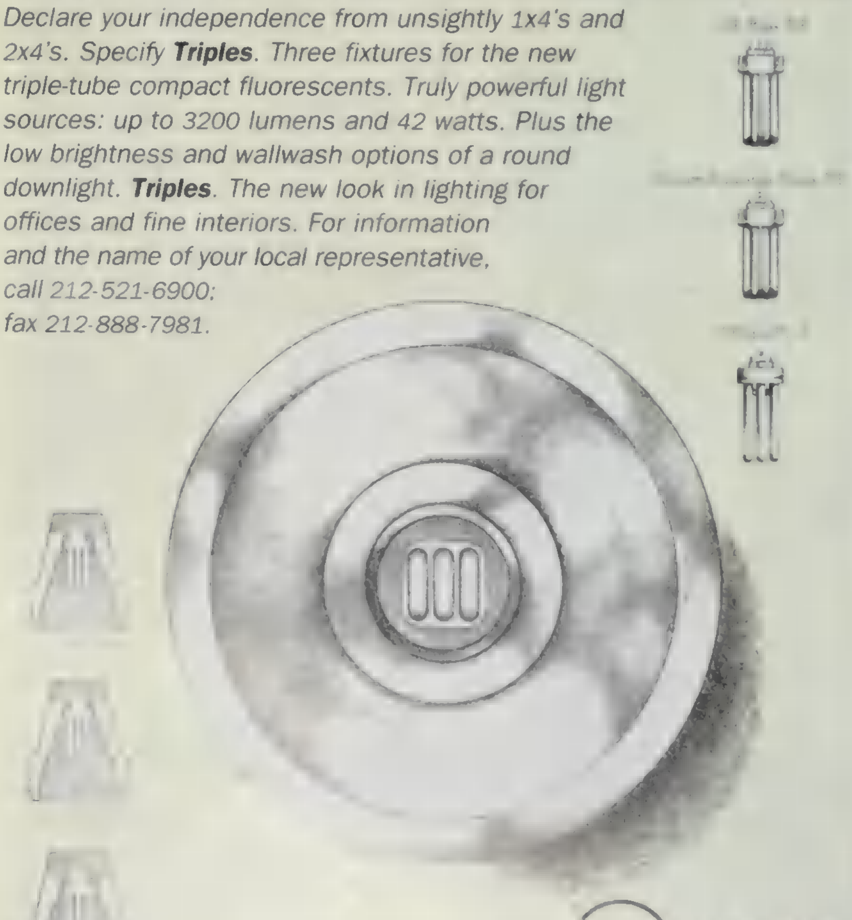

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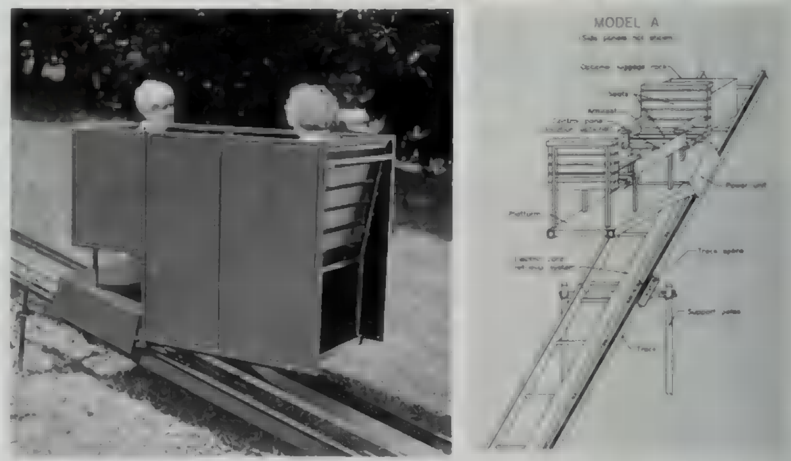

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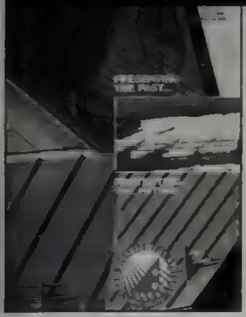
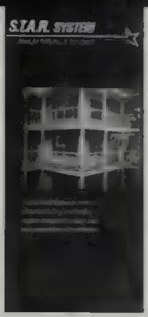
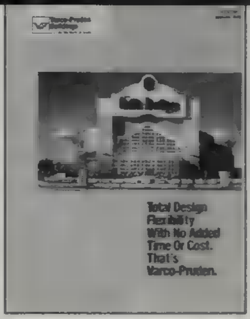




208. High-tech snowguards
A catalog on the Vermont Snowguard explains how the aircraft-aluminum pipe system readily adapts to the configurations of specific roofs, including those of standing-seam metal. Loading, design, and pricing data given; devices can be ordered in mill-, powder-coat, or Kynar finishes. 802/888-7100. Snow Management Systems, Morrisville, Vt.

209. Versatile railings
A pocket-size booklet on the Snap Tight Aluminum Railing explains how interchangeable parts permit "unlimited" fence and stair-rail styles and unique use of color (uprights and rail in different colors, for example) from in-stock components. Meets UBC codes; passes salt-air weathering tests. 800/661-2773. S.T.A.R. System Int'l., Ltd., Burnaby, B.C.



210. Software directory
A 38-page catalog highlights all of this vendor's AEC software, including acquisitions such as Landcadd site work and ECOM structural-design programs. Project- and data-base-management features are built into every product. Text details hardware requirements and capabilities of each program. 800/678-6565. Eagle Point, Dubuque, Iowa.

211. Steel framing systems
A brochure illustrates the design and span options offered by this metal-building manufacturer. Beam and column and open-web truss framing and insulated roof-deck and wall panels are engineered to meet program needs of specific industrial and commercial building projects. 901/767-5910. Varco-Pruden Buildings, Memphis, Tenn.

212. Roof guide/software
A new architectural binder covers all CertainTeed roofs, including Celadon tiles, fiberglass and asphalt shingles, and three-layer slate- and shake-look Shangles. Showcase sections have large color photos of each product; PC and Mac-compatible disks (included) have performance data and three-part specs. Free. 800/233-8990. CertainTeed Corp., Valley Forge, Pa.

213. Bent-glass shower stall
This fabricator's "frameless construction" minimizes the visual distraction of metal fittings on high-style glass shower enclosures. A color portfolio introduces the Neo Solutions stall, with a double-bend, 27-in.-wide door that fits into a standard neo-angle base. Options include curved and etched glass. 800/348-8080. Duschqueen, Inc., Wyckoff, N.J. ■

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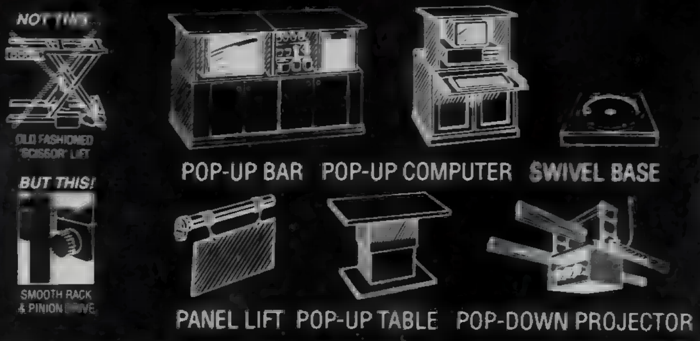

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Letters

Continued from page 8

while other more avant-garde and educationally adventurous projects remain ignored? What is it that we architects should learn from this? (Not one of Mr. Stern's best works.) Some of us are in fact offended by the writer's obvious rationalization about "inexpensive" construction or three different types of brick work to more justify this Jefferson knock-off.

In fact, there has been significant progress in academic architecture in recent years on an array of campuses—the Memorial Hall at Harvard by Venturi Scott Brown, which the July issue also features, is such an example. It combines the best of the old and new.

With only two major magazines servicing the architectural community and a new relationship with the AIA, ARCHITECTURAL RECORD has an even greater responsibility in communicating to the profession. The noteworthy aspect of Stern's design—i.e.: the Jefferson Connection—could have been easily told in one or two pages. The remaining six pages of mainly traditional and other ordinary interiors could have been replaced by a host of compelling and programmatically ambitious projects that your constituency deserves to examine.

Bernard Marson
Bernard A. Marson Architect
New York City

I was very disappointed by the heavy concentration on Neoclassical structures in your July issue on Academic Buildings. Particularly astonishing were the eight pages devoted to the School of Business Administration at the University of Virginia—a timid and banal complex which, while seeming to follow Jefferson's famous village, has none of its richness, complexity, scale, and modesty. Robert Stern has done much better.

There are many other examples of inventive and original modern work in our universities which you could have used, and which your readers deserve to examine.

Paul Willen, FAIA
Chappaqua, New York

Corrections

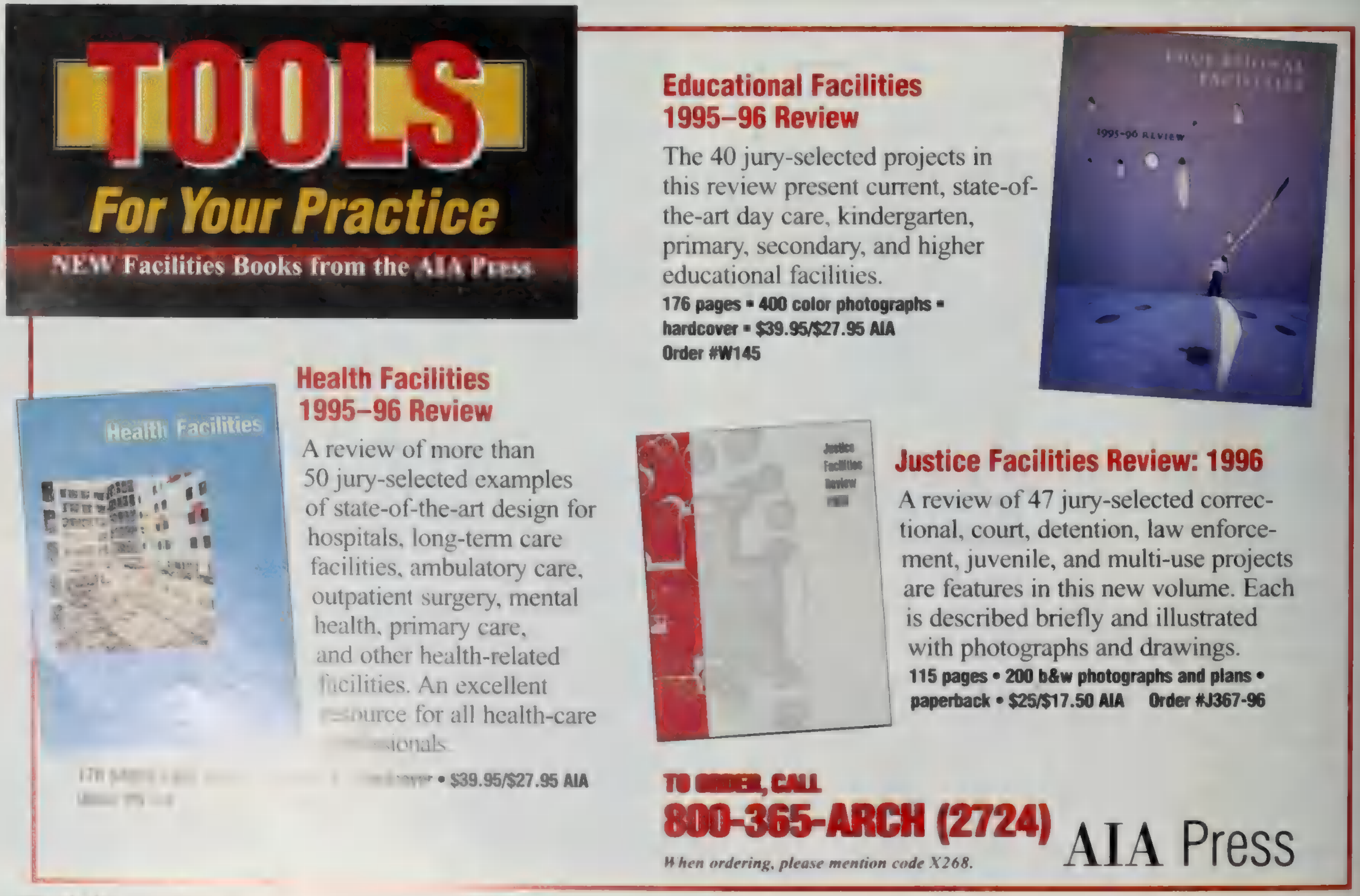
◆ The name of the watercolor-look software on page 59 of RECORD's August issue was incorrectly identified. It is "Piranesi" from Graphic Data Systems; 800/678-4120.

◆ The credits for Kiel Center Arena [RECORD, August 1996, pages 114-117] should have listed Interior Space Inc. as the sole company that performed all architectural and interior-design services for the center's suites.

◆ The credits for the Museum of Contemporary Art [RECORD, August 1996, pages 80-87] should have included Habib Husain as project architect for the associate architect/engineer firm, A. Epstein and Sons International, Inc.

◆ The name of Saverio Manago was misspelled in the credits for the University of Cincinnati's Engineering Research Center [RECORD, July 1996, pages 86-91]. Also, the university's student population is 35,000.

◆ In the August RECORD, pages 110-113, the credits for Coors Field should have included Grenald Associates (facade lighting) and ME Engineers (interior and site lighting, Joy Yamada; sports lighting, Scott Gerard). ■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Money *continued from page 43*

number of reasons having little to do with the measurable qualities of the building.

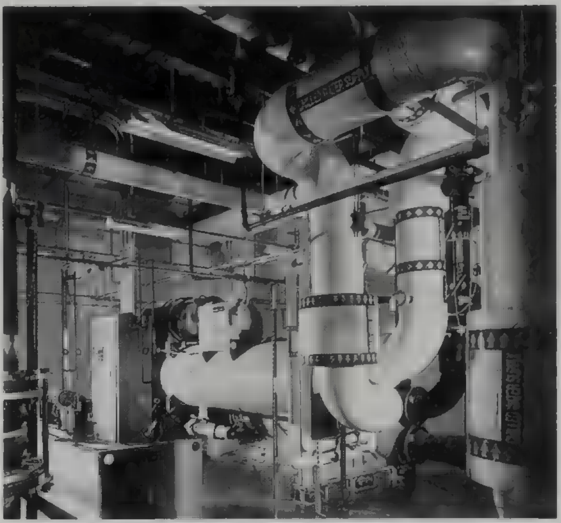
A change in the way fees are structured and paid as radical as the arrangement between Ciba-Geigy and the design-build team is bound to bring up a lot of questions among architects, most obviously, "why must we do this?"

Healy answers by summing up something of the perception currently plaguing architects. "I think the term 'customer focus' often gets lost in the design process. Designers are very good at designing solutions that they think are the right solutions to a customer's problems, but quality incentives force them to really focus on what the customer is saying and solving their problems. Designers can build the perfect building from their perspective, and completely miss the mark of what the client wants. It could be a wonderful building, but not serve the client's purpose."

Richard Hobbs, an AIA vice president working on the institute's Practice and Prosperity Initiative, says, "I think it's fantastic that they're tying incentives to the benefits received by this high-performance building, if in fact the architect or the team defines what they're going to be measured by. But you would think the bonus would be over and above what they're getting, not jeopardizing their livelihoods. We certainly don't want to start undercutting the fee structure."

Hobbs does see incentives, if properly structured and fairly negotiated, as an opportunity. "To me, this example ties right into our Practice and Prosperity Initiative. It talks about architects expanding their role in the process, becoming involved with facility lifecycle; it talks about a facilitator-integrator role; it talks about the understanding of a corporate culture."

Batcher believes "without a doubt" that Ciba Geigy received a better building than they would have without the incentives, and continues, "I think architects need to find a more creative way of conducting their business with their clients, something that is different than the old way that they're accustomed to." Gutman, of Princeton, concludes, "If it works, we may see a lot of it. Customer service seems to be the way of the future."
Charles Linn



The complexity of the mechanical equipment in the Ciba-Geigy Additives Laboratory shows how great a challenge was faced by HLW and their partner, Sardoni Skanska, in completing the facility several months early.

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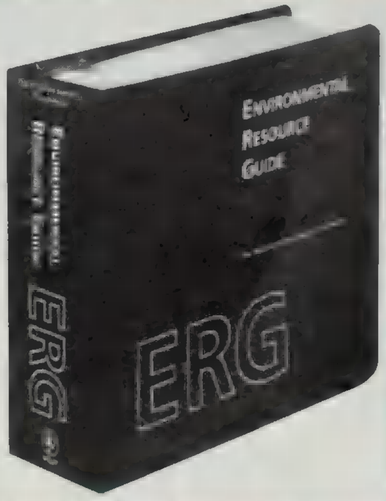

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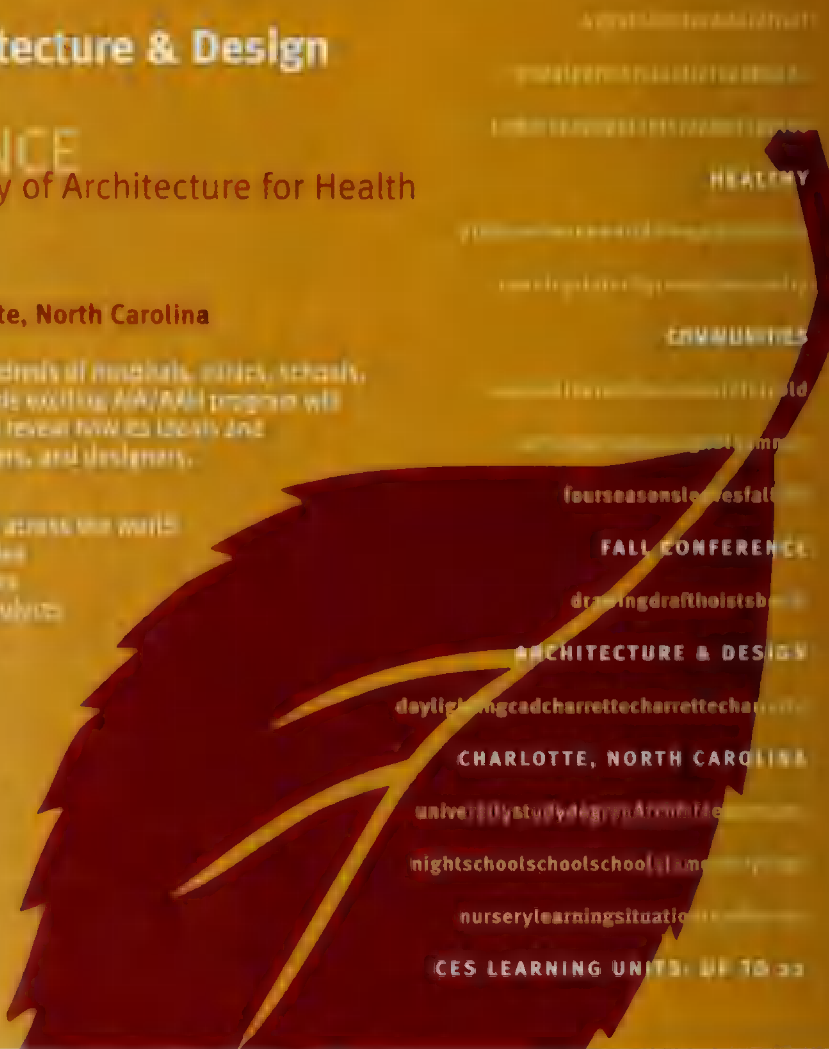
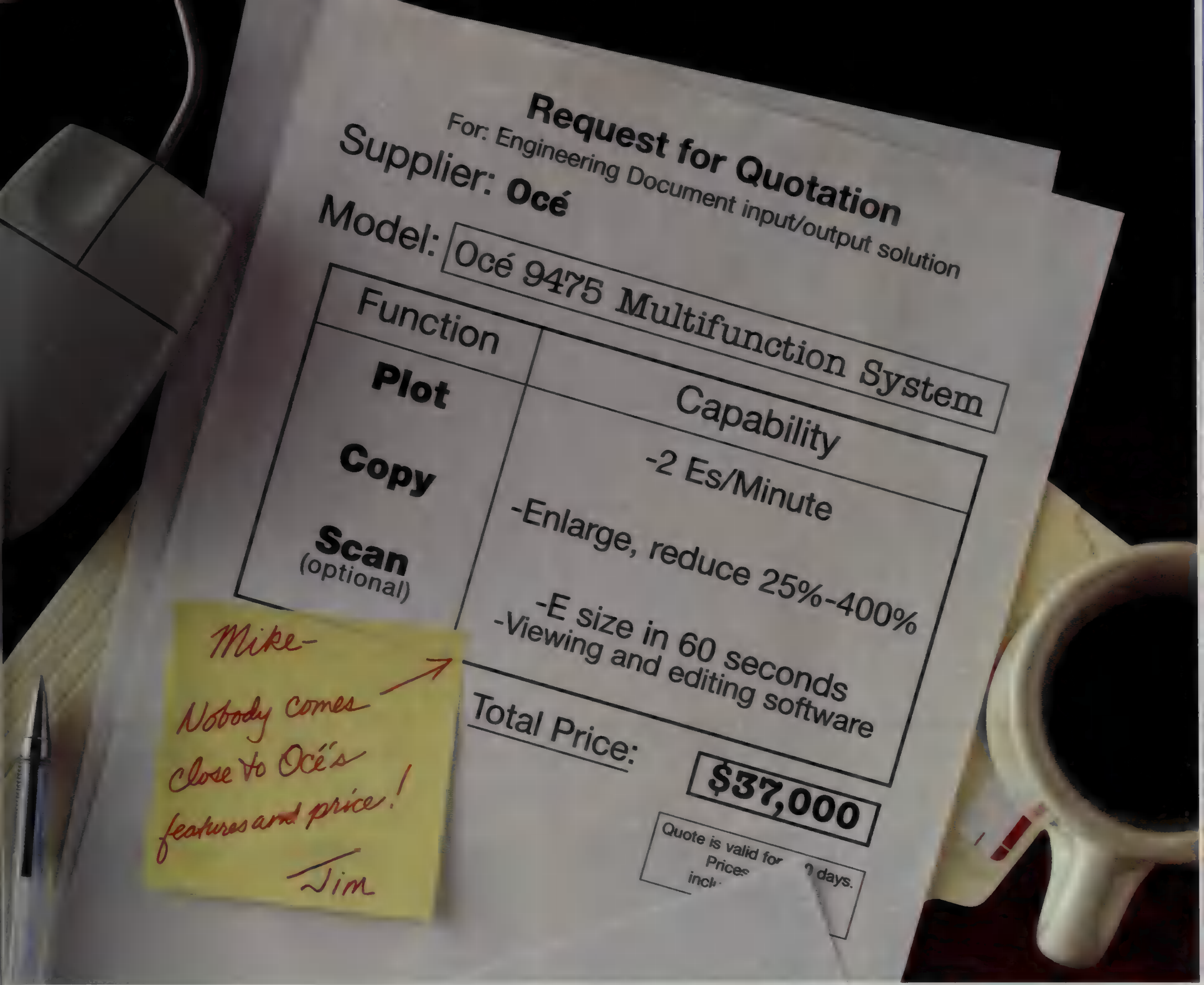
The Healthy Communities Movement has grown to include hundreds of hospitals, clinics, schools, businesses, and healthcare organizations around the world. This exciting AIA/AAH program will explore all aspects of the Healthy Communities Movement and reveal how its ideals and initiatives will affect each of us as healthcare architects, planners, and designers.

PROGRAM TOPICS
- Evolution of the Healthy Communities Movement across the world
- The architect's role in creating healthy communities
- The hospital's role in creating healthy communities
- [illegible]

PROGRAM FEATURES
- [illegible]
- [illegible]
- [illegible]
- [illegible]

[illegible] 636-7356





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For: Engineering Document input/output solution

Supplier: **Océ**

Model: Océ 9475 Multifunction System

Function	Capability
Plot	-2 Es/Minute
Copy	-Enlarge, reduce 25%-400%
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Total Price: **$37,000**

Quote is valid for
days.
Prices
incl

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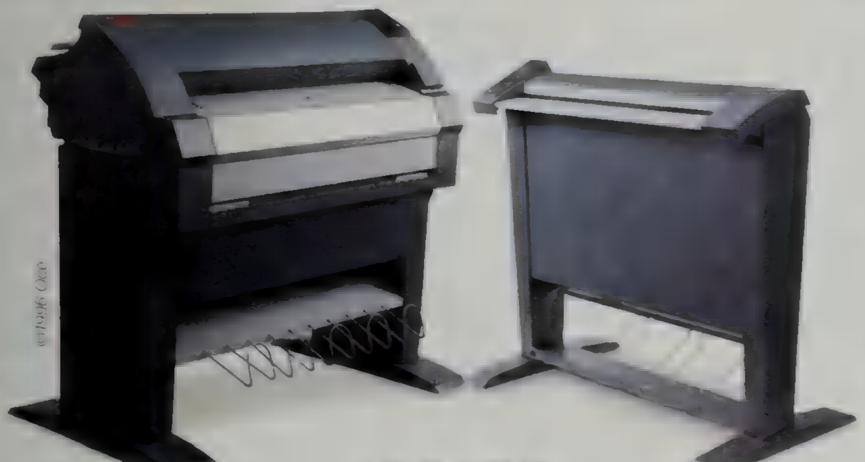
close to Océ's
features and price!
Jim

Océ introduces a system that will satisfy the specs. And a price tag that will blow away your expectations.



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The Océ 9475 Multifunction System

Until now, you'd have to spend as much as $80,000 to get a system that does everything the Océ 9475 Multifunction System does for $37,000. But we didn't cut corners to give you this value.

Why not see for yourself how the system performs? Contact your authorized Océ reseller for a full-capability demonstration, or call Océ for more information. Either way, you'll learn how the Océ 9475 Multifunction System can make a big difference in your productivity for just a little difference in your budget.

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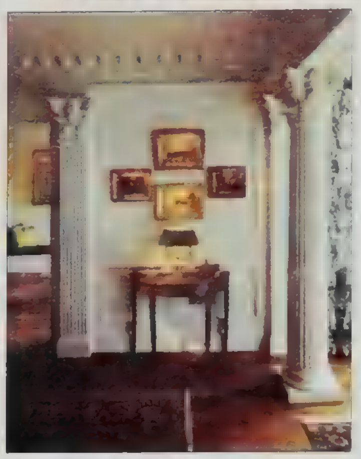
Manufacturers' Spotlight

CHADSWORTH'S 1.800.COLUMNS



CHADSWORTH'S 1.800.COLUMNS offers a unique 44-page color *"Idea Book"* featuring an exciting collection of column projects from Classic to Contemporary for interiors and exteriors. *"Idea Book"* Portfolio also includes Columns Product Portfolio. All this for $10 plus $3 p/h from the column company selected #1 by *Professional Builder* readers. Product Portfolio $5. Wood, fiberglass, Polyester, E.P.S., & Stone. Round, square, octagonal with plain or fluted shafts. Job site delivery, worldwide shipping, competitive prices. Free flier.

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Chadsworth's 1.800.Columns

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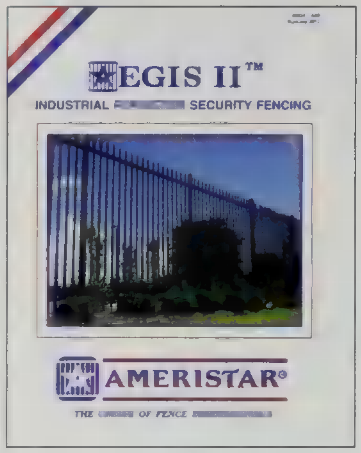
AEGIS II™



Aegis ornamental fence systems feature strong Forerunner™ rails, internal retaining rods, & specially designed panel brackets. Aegis II industrial ornamental fence offers the strongest security ornamental fence available in todays market. Aegis holds the distinction of having its fence systems specified by more architects & builders than any other in the market. Both industrial & residential brochures are available upon request & include data on structure design & options available. Panel design is a component system for easy shipping. For additional information & a free 8-page brochure, call (800) 321-8724. P.O. Box 581000, Tulsa, OK 74158-1000. Fax# (918) 835-0899

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The TOTAL DOOR® SYSTEM

Is an architect-designed integrated door assembly. It includes prefinished door panels and all hardware. Fire rated pairs do not require coordinators, vertical rods, astragals, flush bolts or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and meta;l faces available to 3 hours. Lifetime limited warranty on locks and panics.

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Pontiac, MI 48342
1-800-852-6660

Openings

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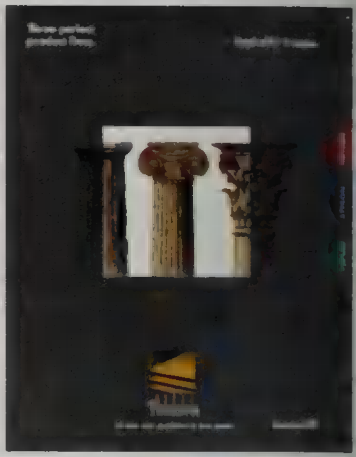
Trespa® Solid Composite Panels Three Product Lines



Toplab® chemically resistant laboratory grade panels for benchtops, work surfaces, shelves. Athlon® sanitary grades for toilet partitions, lockers, vanities. Meteon® UV colorfast grade for exterior cladding, soffits, fascias, balcony panels. All grades are durable, available in colors, and proven performers in these applications. 1-800-4-TRESPA.

Hoechst Celanese Corp.

Circle 78 on Inquiry card

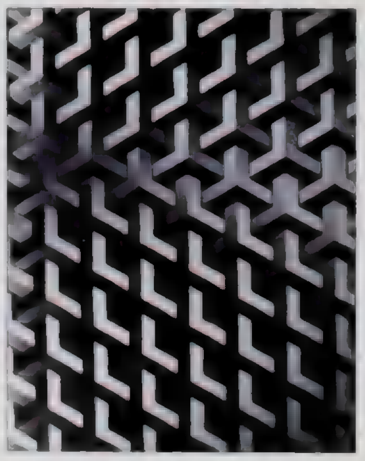
Concrete Waterproofing by Crystallization

Applied as a slurry coating, Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that plugs the pores of the structure preventing water seepage. [illegible] ideal for [illegible] the [illegible] of wet [illegible]

Xypex Chemical

[illegible] on Inquiry card

Sheet Metal Decoration



INTRODUCING THE NEW ALPHA COLLECTION FOR 1995. With 24 patterns to choose from, ranging from the most basic vandal resistant **TEXTURES** to innovative **STANDARDS** and our new **ULTRA Series** [illegible]! Patterns come in standard sheet sizes with border-to-border decorations using distinctive finishes on a variety of metal surfaces for elevator doors and interiors, wall panels, column covers and trim. Starting at less than $10 per sq. ft. for Textures. The average price for stainless steel Standards is $12 to $15 per sq. ft. Call 800-537-1157.

Surface Design + Technology

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Decorative, Thin-Film Intumescent Fireproofing

A/D FIREFILM®
DECORATIVE, INTUMESCENT FOR STRUCTURAL STEEL
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Now Certified for beams and columns for ratings up to 2 hours! A/D Firefilm permits the designer to use the appearance of exposed steel with the steel fully protected from fire. It is applied as a thin-film coating 0.4 to 3 mm (0.02 to 0.12 in.) thick. During a fire A/D Firefilm expands to form a meringue-like layer up to 100 mm thick, which insulates the steel from the fire. The topcoat is available in a wide choice of colours.

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A/D Fire Protection Systems, Inc.

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Porcelain Enamel panels offer designers a solution that has an almost unlimited choice of color; a permanence that will not fade when attacked by the weather, by chemicals, or be marred by vandals.

PG Bell is North America's largest manufacturer of heavy gauge porcelain enamel panels, supplying both wall systems and signage to the architectural market. We offer design assistance, engineering, manufactured panels, and installation services. Our markets are not limited to North America - but are worldwide.

PG Bell

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Manufacturers' Spotlight

Back Issues of Record Lighting

Add to your files by ordering back issues of RECORD LIGHTING, the exciting color supplement to Architectural Record. The price per issue is only $3.50 each (includes postage and handling). Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

Record Lighting

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Fire Retardants and Preservatives

Hoover Treated Wood Products' new 12-page Sweet's catalog features Pyro-Guard third generation interior fire retardant lumber and plywood for roof sheathing and other structural uses; Exterior Fire X FRT lumber and plywood for decks, balconies, siding and other outside uses; and CCA preservative treated lumber and plywood that's kiln dried after treatment

Call 1-800-832-9663.

Hoover Treated Wood

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Accessible Lavatory Insulation

A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use, sample specifications, drawings and color choice are all summarized in this easy to understand catalog.

Plumberex

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New Fireplace Tested as a Wall Furnace

Heat-N-Glo Fireplace Products has taken its direct-vent technology and incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) and has a AFUE (Annual Fuel Utilization Efficiency) rating of 63%. Also, the 6000 Supreme is standard with a variable regulator to adjust the flame and BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy 13, Savage, MN 55378, 1-800-669-HEAT.

Heat-N-Glo

Circle 86 on Inquiry card

New Anchoring Systems from Strong-Tie®

This brand new 36-page reference for architects and structural engineers combines Epoxy-Tie™ adhesive and retrofit bolts with Strong-Tie®'s line of load-rated mechanical anchors, including Wedge-All™, Sleeve-All™, and Mascru™ products. Complete load specifications are included, plus recommended anchor spacing, edge distance, hole sizing and embedment depth.

Simpson Strong-Tie Co., Inc.

Circle 87 on Inquiry card

Atlas makes a Big Hit at Rams Stadium

Atlas Door supplied 110 counter shutters, 15 service doors, and 22 fire doors to accommodate the design needs of the Trans World Dome at America's Center, home of the St. Louis Rams. The installer, Zumwalt Corporation, worked closely with architects to ensure specific design requirements were met for this 70,000-seat stadium and convention center. Call 800-959-9559

Atlas Door Systems

Circle [redacted] on Inquiry card

High Performance Drop Diffuser System

Exclusive Air Diverter design by Custom Curb, Inc., provides super-low resistance, quiet operation and excellent air distribution. It reduces installation costs and eliminates expensive duct runs. Offers maximum comfort and efficiency in ceilingless applications such as retail/outlet stores, manufacturing plants and other places where air distribution poses problems. Factory assembled. Various models offered including Low-Profile. 1-800-251-3001.

Custom Curb, Inc.

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Complete 2D and 3D Architectural Software

Chief Architect 4.0 is an extremely powerful architectural design program which is also very easy to use. Quickly create the 3D model using objects (walls, windows, doors, cabinets, etc.). Customize the shape, angle, door style, 3D patterns, roof style, etc. Automatically generate elevations, cross sections and 3D views, then send the views to multiple layout sheets for assembly. Add extra details using CAD, then print the final drawings.

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208-664-3854.

Chief Architect

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Manufacturers' Spotlight

Automated Vacuum Transport Systems

Waste and/or soiled Linen

- Perfect for large hospitals and similar buildings that serve thousands of people
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- Full-vacuum and gravity/vacuum tecnology
- Custom design each system to building specifications

Transvac System, Inc.

Circle 91 on Inquiry card

Conservatories

Amdega - Machin Conservatories' new 1996 brochure is now available. The Amdega line is recognized for creating the finest traditionally styled conservatories since 1874. The Machin line is reminiscent of the graceful & romantic structures of previous centuries. A wide range of designs and styles for residential and commercial applications are featured.

Call 1-800-922-0110
for more information.

Amdega-Machin Conservatories

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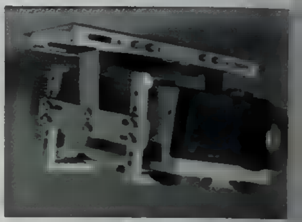
King Luminaire combines the great photometrics you need with the quality and appearance your project must have. Engineered to provide maximum lighting performance with minimal long term maintenance. King Luminaire fixtures and poles offer versatility, quality and a long, long service life. We specialize in buyer satisfaction. Call us at 1-800-268-7809.

King Luminaire Co., Inc.

Circle 93 on Inquiry card

Mount for LC Projecto

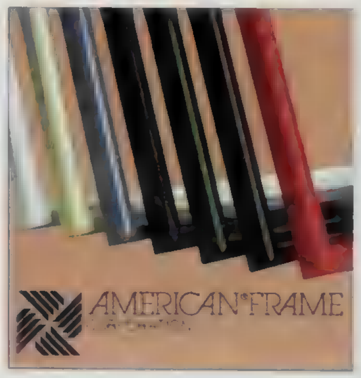


Designed to accommod
LC projectors weighing up
75 lbs. the new Peerless PJR
Projector Mount is adjustabl
height (5 5/8" - 9 3/8")
width (10" - 25 3/4"). It feat
0° to 10° forward and ba
ward tilt, heavy-gauge st
construction, rubber-li
clamping mechanisms at
four corners, and full 360° r
tion when used with
optional extension colu
Available in gray or black,
PJRL30, may be moun
directly to the ceiling.

Peerless Industries

Circle 94 on Inquiry card

Discover American Frame

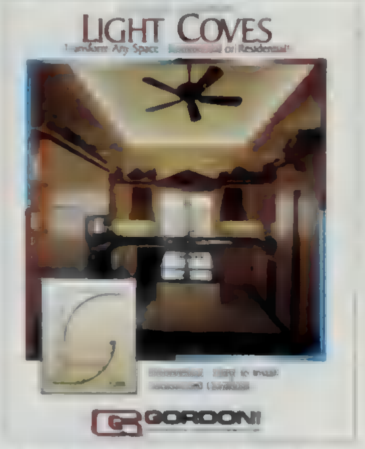


For 23 years American Frame has offered quality picture frames at a low cost. Our [illegible] showcases customized metal and wood frames [illegible]

American [illegible]

[illegible]

Gordon Extruded Aluminum Light Cove



A new [illegible] page brochure discusses the advantages of using extruded aluminum light cove versus GFRG shapes in both residential and commercial applications. Positive locking splices insure tight joinery; factory mitered and welded corners eliminate labor intensive field work. For your free light cove brochure or complete 70 page product manual

call 1-800-747-8954 or fax
1-800-877-8746.

Gordon, Inc.

[illegible] on inquiry card

Security Mesh

Security Mesh sheets are steel mesh panels used as a penetration resistance shield behind drywall finishes. These sheets are to be attached to metal studs and track or wood supports designed for use in walls. **Basic Use:** Prisons, government offices, strip malls, record storage rooms, computer rooms, courthouses, museums, mini warehouses, apartments, condominiums, pharmacies, art galleries, mail rooms, airport security, banks, hospitals, police stations and general office security.

Amico

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1996 Western Wood Use Book

Now you can buy the 1
Western Woods Use B
for just $60. It's compat
with all model buil
codes and comes
software to aid in desig
columns and beams.
incorporates the la
changes in design,
updated column
beam tables and come
a handy binder t
makes future upd
easy.

Western Wood

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Manufacturers' Spotlight

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Fax: 212-512-2074

Wood Windows and Doors

For 75 years, Zeluck has served both architects and custom builders with architectural wood windows and doors unparalled for flexibility, quality and service. Zeluck offers a wide selection of glass and hardware, and timber from responsibly managed forests. Our triple hungs, European casements, tilt & turns, copper clad, bent units, bi-folding doors, lift-sliding doors and French doors are but a portion of our product line. Whether a custom home, hotel, institution or historical project, we can make your fantasy a reality.

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Musson Rubber Co.

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Raymond Enkeboll Designs ©1996

Raymond Enkeboll Designs ©1996. Crafts an extensive array of Architectural elements carved in solid woods. New 104 pg. Color Product Catalog, shows a selection of capitals, corbels, moldings, onlays, panels etc. Stocked in Maple and Red Oak, available for immediate delivery. Bound catalog $20, binder version $30. Visa & MC welcome. Complimentary brochure available. Raymond Enkeboll Designs 16506 Avalon Blvd. AR10, Carson, CA 90746. Phone: (310) 532-1400 Fax: (310) 532-2042

Raymond Enkeboll Designs

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IBM CATIA/CADAM Solutions

Let IBM's CATIA/CADAM AEC Plant Solutions (CCPlant) streamline your plant design, construction, and operation processes. CCplant provides plant owners, operators, engineering, and construction firms access to engineering and design data across their businesses.

For more information about **CCPlant call 1 800 395 3339** or e-mail us at: **peravage@vnet.ibm.com**

IBM

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Build trust into your walls

A new Finishes brochure describes how Parex enhances finishes and coatings with the very latest in polymer technology. Interior and exterior, new and retrofit, upgrades or extensive renovations. Parex 100% Acrylic Finishes and Coatings resist the most damaging elements. Select a Siliconized or Elastomeric Finish for ultimate performance. Blend an elegant Cerastone® designer finish that's scratch resistant and easy to repair. Get your free Finishes brochure today at Parex 800-537-2739 (LEPAREX)

Parex Inc.

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Formglas Inc.

Quarrycast® by Formglas is a lightweight "moulded stone" manufactured with glassfiber reinforced inorganic minerals. We offer many exciting applications for interior use. Installation is quick and only requires regular carpenters tools. A complete wall system offers 5/16" thick veneer panels, outside corners, baseboards, cornices, door frames, etc. Custom components are also available, as well as additional colors.

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Formglas Inc.

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Truebro, Inc. Lav-Shield™ Lavatory Protective Enclosure

LAV SHIELD
The ultimate in ADA-engineered, designer-style, tamper-resistant lavatory protective enclosures.
TRUEBRO

Another ADA undersink solution from TRUEBRO is the all new Lav Shield™ under lavatory enclosure. Designed to meet the aesthetic and dimensional criteria for accessible lavatories where insulation cannot adequately cover electronic faucet connections, mixing valves, trap primers and instantaneous hot water heaters the Lav Shield™ performs while providing knee and toe clearances for wheelchair users.

Truebro, Inc.

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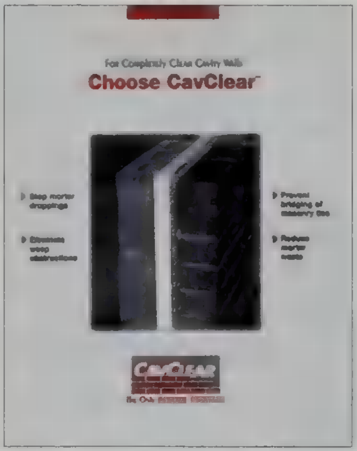
Innovative Solutions to Masonry Problems



New products offer design solutions for cavity wall problems. CavClear™ products assure top quality by preventing mortar accumulations in the air space. Moisture migrates freely to unobstructed weeps. Adjustable masonry ties are protected from mortar droppings. A clear air space results in proper movement isolation, reduced cracking and long -term performance of the building system. Ensure a clear cavity by specifying CavClear. Call us toll free at (888) 436-2620.

CavClear/Archovations

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OUTLOOK '97

Executive Conference

October 23rd and 24th at the
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Top construction and building product executives will gather for the 57th annual advance presentation of McGraw-Hill Construction Information Group's *Construction Outlook*–an analysis of the economic environment, statistics and market trends that will shape business in '97.

Industry decision-makers at the Outlook '97 Executive Conference will also benefit from the unique, inside perspectives of featured speakers :

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Chris Matthews

William Safire

Dan Quayle, 44th Vice President of the United States and vigorous advocate for economic growth.

Chris Matthews, best-selling author, CNBC host, ABC commentator and Washington Bureau Chief for the *San Francisco Examiner.*

William Safire, Novelist and Pulitzer Prize winning political columnist for *The New York Times.*

Robert Peck, Commissioner for Public Building Service of the GSA.

Donald Tapscott, author of *The Digital Economy* and *Paradigm Shift*

David Wyss, Chief Economist for DRI/McGraw-Hill.

Robert Murray, Vice President of Economic Affairs for McGraw-Hill Construction Information Group and author of *Construction Outlook '97.*

Please call 1-800-371-3228 for information and a schedule of regional Outlook '97 presentations.

Mc[illegible] Construction
In[illegible] Group

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Archite[illegible]truction News Publishing Network
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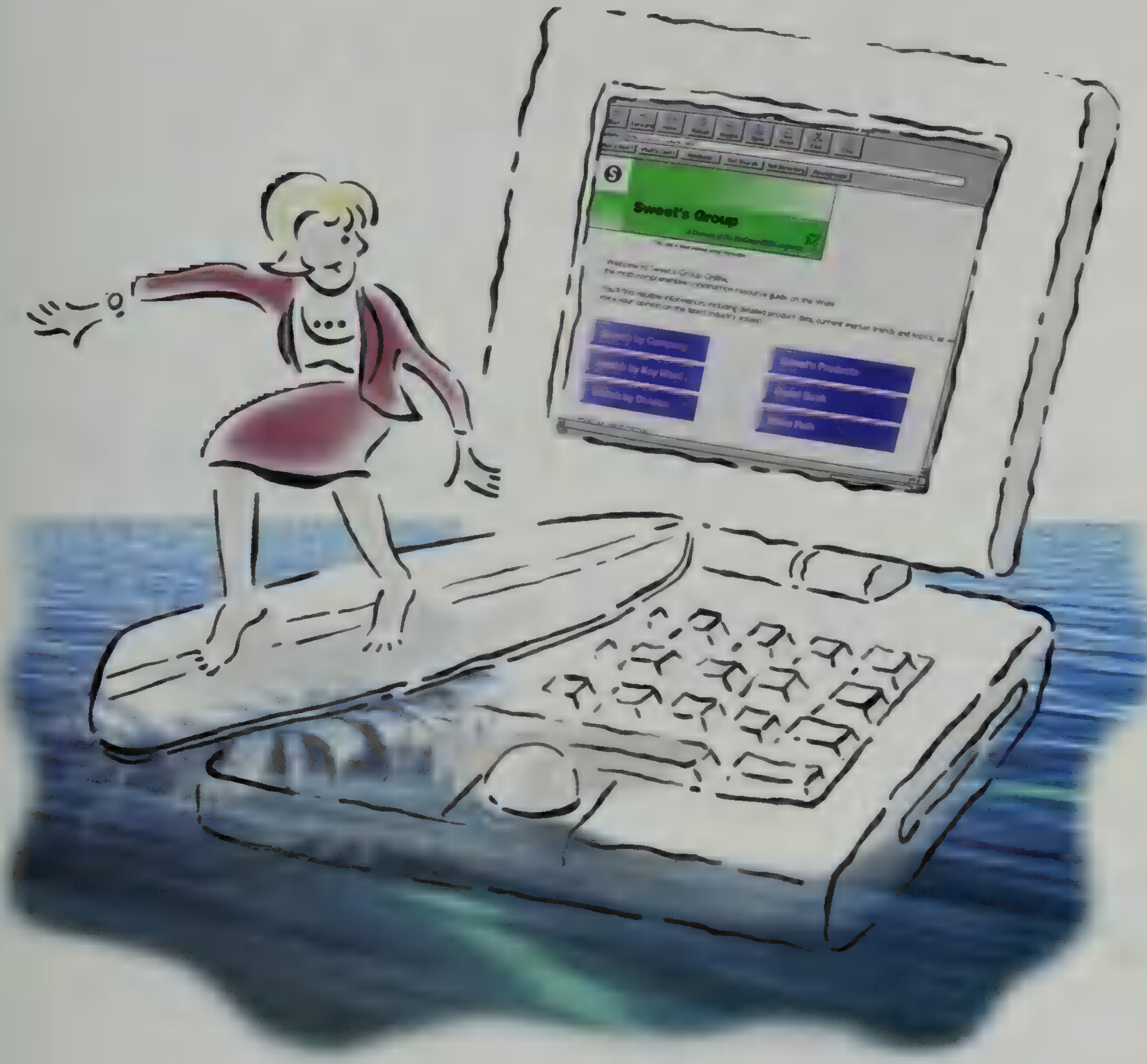
Sweet's Web Site



With a point and a click and an *http//:* the architect Margaret began to surf the web over for knowledge to see which products would fit in her plan.

And soon, before long, she came on a web site, like no site that she'd seen before. The products were many, the data was right — with specs and CAD drawings galore!

It's called Sweet's Web Site — it has details and specs, components that you can compare. It's always updated, so you can select the latest and best stuff "out there."

So come surf the 'net, and check out Sweet's Web Site — like Margaret does time and again. It's fun and its fast, you can search day or night — you won't even have to hang ten!

http://www.sweets.com

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For more information call
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Construction professionals can benefit from accessing the National Gypsum home page of user-friendly information designed especially for architects, specifiers, contractors, building code officials and distributors. For your convenience, information is organized following CSI Masterformat, and includes: Guide Specifications (written in CSI 3-part format), Product submittal pages, CAD files and Material Safety Data Sheets (MSDS).

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th your technical questions, dial **1.800.NATIONAL** or FAX **1.800.FAX.NGC1**
m **Company** 2001 Rexford Road, Charlotte, North Carolina 28211

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AIA/Architectural Record Continuing Education

This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education Series discusses leading-edge communication technologies and their applications in practice. Use the following learning objectives to focus your study. After reading the article (pages 46-51), complete the questions below and check your answers (page 134). AIA members may fill out the self-report form in this issue and send it in for two AIA Learning Units. Also, consider signing up for the October 23, 1996, AIA Technology Updates Audio Conference. Contact 202/626-7436 for more information.

Mark Scher
AIA Director Continuing Education Programs and Products

Learning Objectives:

After reading the article "Merging Virtual Technologies Change the Rules of Collaboration" and completing the exercises, you will be able to:

- Identify three entrepreneurial practice applications for off-the-shelf communications technologies.
- Briefly describe an approach for implementing a telecommunications strategy and its desired outcomes for linking different business sites.
- Describe at least five uses for electronic 3D approaches during the design process.

QUESTIONS

1. How can easy-to-use commercial on-line services such as America Online and CompuServe be of benefit to design firms?

Answer 1. ______________________________

2. Using the NBBJ example, what is the strategy for linking offices in different cities through networking and telecommunications?

Answer 2. ______________________________

3. What are the immediate payoffs in networking and video conferencing between offices?

Answer 3. ______________________________

4. List four advantages for connecting geographically distant design teams through intranet and database technologies.

Answer 4. a. ______________________________
b. ______________________________
c. ______________________________
d. ______________________________

5. What is the value of the new 3D visualization software?

Answer 5. ______________________________

6. Many see electronic 3D environments as a future trend. What are some practical design firm applications for this technology?

Answer 6. ______________________________

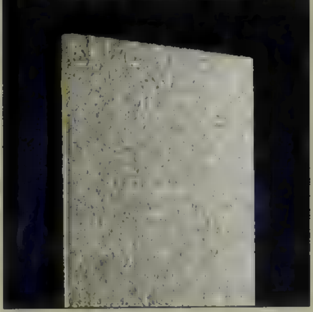
For answers and self-report form, turn to page ***134***

T E C T U M I N C.

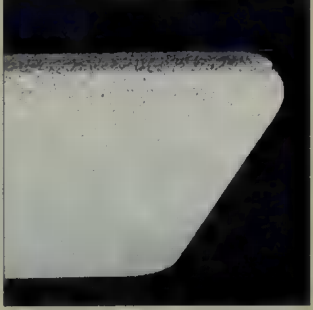
Tectum Inc. brings you the future of sound absorption today with our newest line of acoustic ceiling and wall panels.

ImagePanels

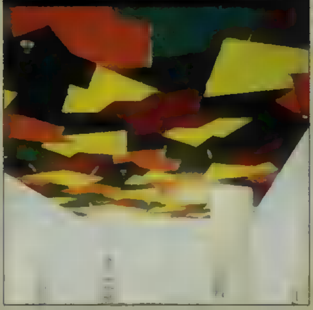
Kerfed Wall Panels



Cloud Panels



Wilhelmi Acoustic Panels



■ Custom color combinations
■ Tough abuse resistant surface
■ Contemporary design

■ Excellent sound absorption
■ Easy installation
■ Economically priced

■ Floating system–no visible suspension
■ Better performance in high areas
■ Tough construction, superior support

■ Custom shapes and colors
■ Unlimited design possibilities
■ Zero flame spread

Tectum Inc. introduces a full line of innovative acoustic ceiling & wall panels. For nearly fifty years, contractors and architects have relied on Tectum Inc. to manufacture the most durable, acoustically sound products. And this year, we bring you more leading-edge performance and maximum creativity with exciting new products including Wilhelmi Acoustic Panels. They're abuse-resistant. They're environmentally friendly. They're affordable. And they're brought to you by Tectum Inc.

WILHELMI ACOUSTIC CEILINGS+WALLS

TECTUM INC. Since 1949

For information on this complete line – or an architectural presentation, call 614.345.9691.

Circle 51 on inquiry card

AIA/Architectural Record Continuing Education

Questions on page 133

Answers

1. On-line services offer an opportune venue for marketing one's expertise and specialties through participation in on-line discussion forums; identifying potential clients, out-of-town associated architects and other possible collaborators; and messaging and file sharing through e-mail facilities. (Note that some services allow, and provide tools for, building personal web sites.)

2. First, standardize software applications running on each office's local area network (LAN) and then connect the various LANs via wide area networking (WAN).

3. Tele-linking offices leverages human resources and access to information across offices and cities. NBBJ's approach enables file sharing and better opportunities for technical trouble-shooting. Further connectivity occurs through video-conferencing, which can save time in traveling to meetings and helps share staffing resources.

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c) Centrally located accessible information and queries can improve monitoring and reduce query-tracking efforts;
d) Increasing awareness of unresolved issues.

5. Some packages optimize the use of 3D modeling with easy switching between 2D and 3D views. This type of software can be used to make animations, such as fly-throughs. Transferring them through Websites to clients allows quicker feedback and more frequent updating.

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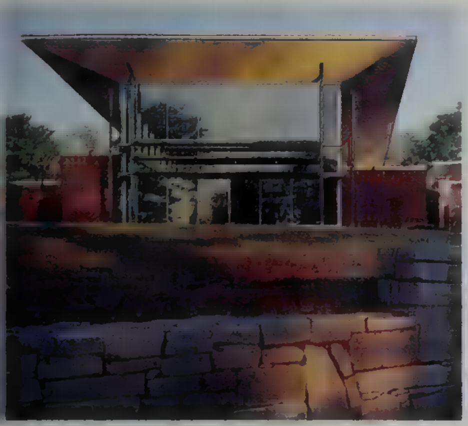
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November 14-17
The Ninth Symposium on Healthcare Design will be held at the Boston Marriott Copley Place Hotel. For details, call 510/370-0345 or fax 510/228-4018.

November 14-17
The International Excellence in Building Conference and Exposition for construction-industry professionals will be held in Minneapolis. For details, call the Energy Efficient Building Association at 612/851-9940 or fax 612/851-9507.

November 15-February 23
"An American Embassy in Berlin" examines the recent competition for the American Embassy in the German capital. Models and drawings by all semi-finalists as well as the winner, Moore Ruble Yudell and Gruen Associates, will be shown at the National Building Museum, Washington, D.C. Call 202/272-2448 or fax 202/272-2564.

November 19-21
Build Boston, the annual trade show and convention for the building industry in the Northeast, will be held at Boston's World Trade Center, with over 250 exhibits by suppliers of products and services and 180 workshops. Call 800/544-1898 for information or to obtain a workshop brochure.

November 22-January 12
"The Architecture of Santiago Calatrava" moves into the Milwaukee Art Museum (MAM) with an exhibition that will include models, drawings, and photos of the Spanish-born architect and engineer's major works. Calatrava's first completed project in the U.S., scheduled to open in 2000, is an expansion of MAM. Call 414/224-3240.

Through November 30
Buildings by Julie Eizenberg of Koning Eizenberg are being shown at 3A Garage Architecture in conjunction with the San Francisco AIA and San Francisco Museum of Modern Art. The exhibit shows her latest works and includes projects that demonstrate the designer's interest in bringing character to low- and moderate- income housing. Call 415/543-3347 for information.

Through December 6
The Center for Critical Architecture/Art and Architecture Exhibition Series is showing 14 of the projects that won *Progressive Architecture*'s 43rd Annual Awards (but were never published in *P/A* due to the magazine's sale and subsequent demise). The show is at the California College of Arts and Crafts, San Francisco campus, in the main gallery. Call Sarah Herda at 415/546-7033 or 415/703-9568.

Through December 8
"Breuer's Whitney," an exhibit at the Whitney Museum of American Art, New York City, takes a critical look at the design, reception, and continuing legacy of architect Marcel Breuer's 30-year-old building of "upside-down ziggurat of cantilevered 'setouts' and trapezoidal bay windows" on Madison Avenue that became an instant landmark. Call 212/570-3633 or fax 212/570-1807 for details.

Through December 15
The drawings of Louis Kahn are on exhibit at the Jewish Museum, New York City, and include architectural drawings and models surveying Kahn's synagogue projects. Call 212/423-3271 or fax 212/423-3232 for details.

Through January 5, 1997
Vernacular Architecture in American Folk Art is the subject of an exhibit at the Museum of Folk Art in New York City. Curator Stacy Hollander has selected some 100 paintings, sculptures, furnishings, needleworks, and other decorative-art objects from public and private collections to document the structures that shaped the early American built environment. Call 212/977-7170 or fax 212/977-8134 for more information.

Through January 19, 1997
"Three Buildings by Frank Lloyd Wright: American Spirit Alive in Japan" traces the history of the only three non-U.S. buildings Wright designed and built: the Imperial Hotel, Yamamura House, and Jiyu Gakuen Myonichikan School. At the National Building Museum, Washington, D.C., 202/272-2448, or fax 202/272-2564.

January 22-26, 1997
The National Association of Home Builders Convention in Houston will include an AIA Housing PIA (Professional Interest Area) slide presentation of the top 25 architect-designed and developer-built residential units, and three sessions of plan-review workshops targeted toward builders to help them work more effectively with architects. Call 800/368-5242 for information.

Through February 16, 1997
An exhibition at New York City's Metropolitan Museum of Art surveys the career of Charles Rennie Mackintosh, with 250 works that include photos and drawings of his buildings, furniture, textiles, and the reassembled Ladies' Luncheon Room from Miss Cranston's Ingram Street Tea Rooms.

March 6-8, 1997
Six PIAs (Professional Interest Areas) and the AIA risk-management committee is cosponsoring a conference, The Client Connection, at the Westin Tabor Center in Denver. Endorsed by the AIA Denver, AIA Colorado, and the AIA

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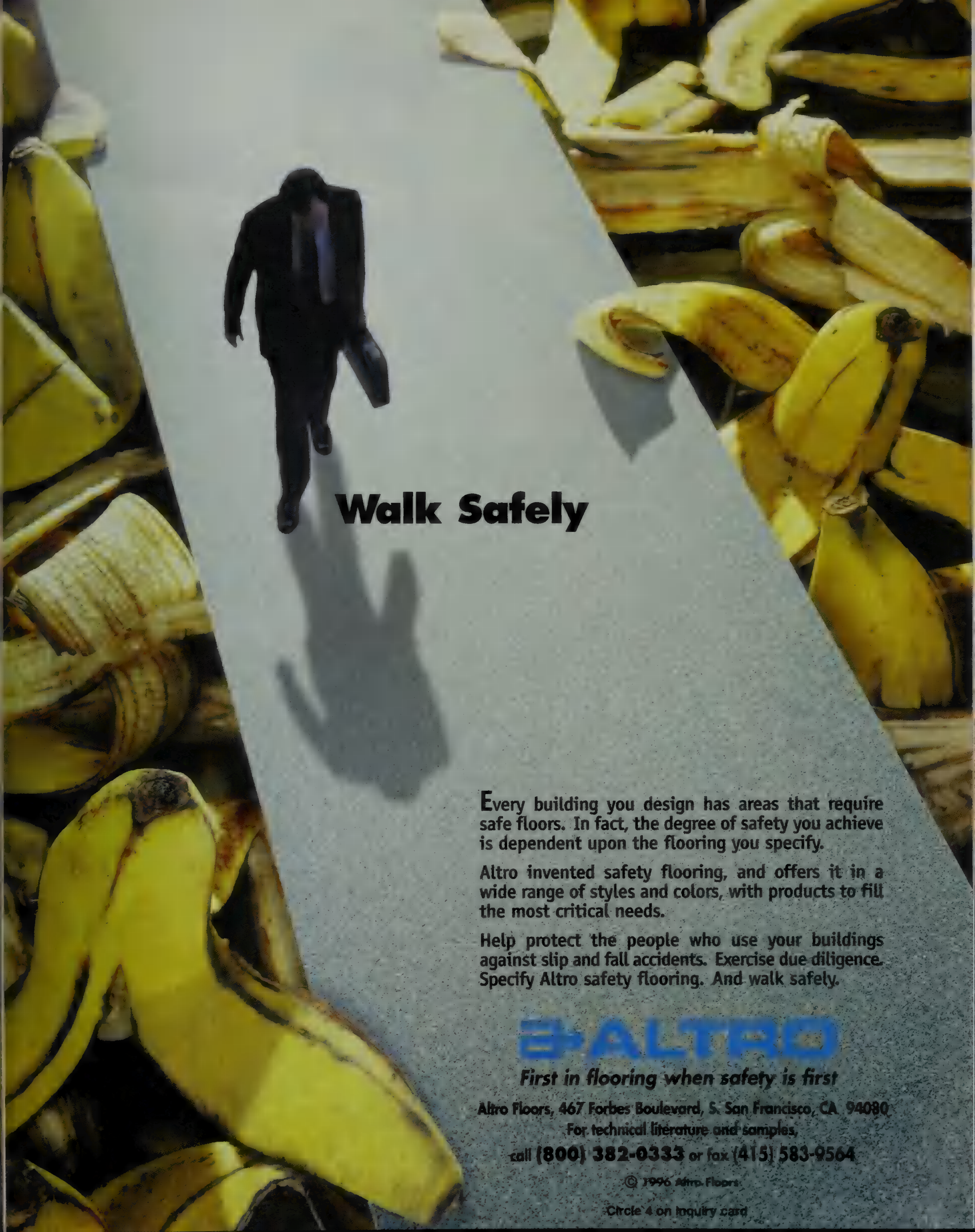

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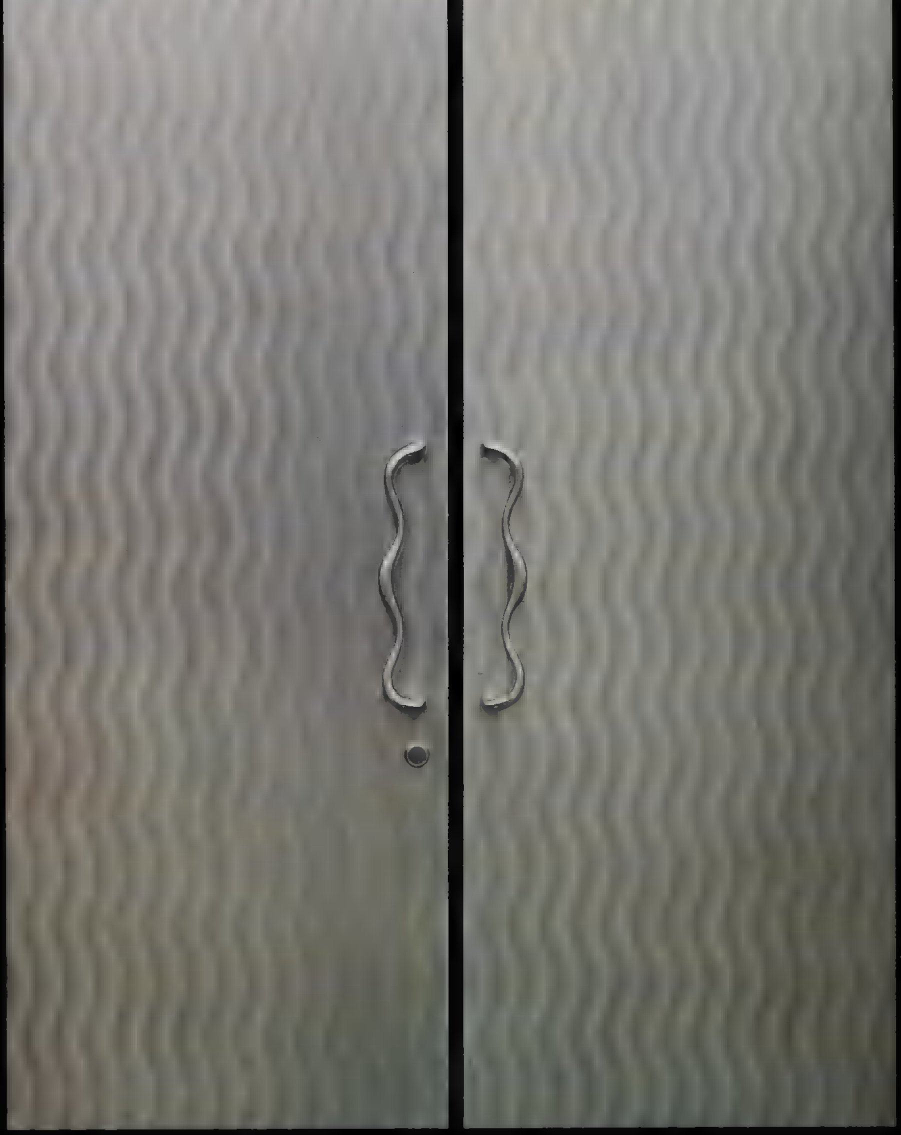


From the Publisher

New Editor-in-Chief Chosen for RECORD

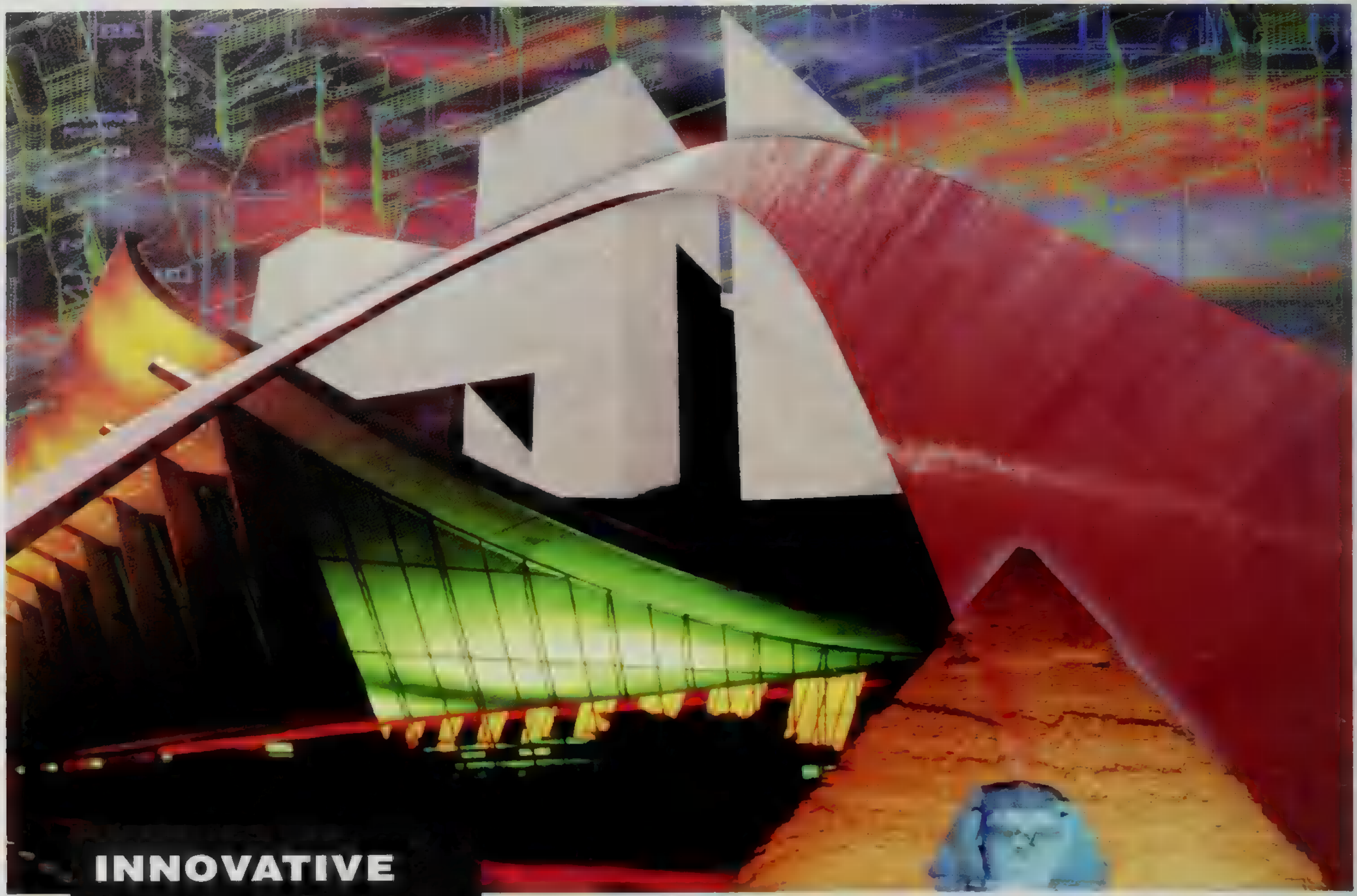
The editor-in-chief is responsible for guiding the vision and the voice of the magazine. The successful individual in this role must combine wonderful journalism skills with the ability to manage staff and budgets. And for a publication like RECORD, the successful editor must have a keen feel for the interests and needs of our audience, must understand the subject matter fully, and must have the graphic judgment to insure delivery of our content in a way that will please our very discriminating constituency. In addition to all this, the successful editor must possess the skills to be a strong ambassador to our readers and to the construction industry. These are the criteria that were set for our editor-in-chief search. And we undertook this search with a strong commitment to find the person most capable of guiding RECORD into our very exciting future.

We interviewed so many talented people. One stood out. **I'm very pleased to announce that the new Editor-in-Chief of ARCHITECTURAL RECORD is Robert Ivy, FAIA.**

Here's a bit of an introduction. Then in future issues, you'll get to know Bob through his own words and actions. Bob has led a distinguished dual career in architecture and journalism. As a principal of one of the most successful firms in the mid-south and as a sole practitioner, he has been recognized for excellence in design and historic preservation. Bob is an accomplished journalist with two decades of experience on regional, national, and international publications, and is the author of the award-winning book *Fay Jones*. As an active member of The American Institute of Architects and other professional associations, and as a teacher at the university level, Bob has made significant contributions to his community and the profession.

Bob brings a depth of insight and knowledge that is certain to enrich the way we serve our diverse and demanding audience. Great things are ahead!

Elaine Shusterman



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Practice

Justice Department Sues Ellerbe Becket Over ADA Violations At Six New Sports Arenas

The Justice Department has sued the nation's largest architectural firm, Ellerbe Becket, for designing inaccessible sports arenas in Boston, Portland, Philadelphia, Buffalo, Washington, D.C., and Cleveland. The suit, filed after eight months of failed settlement negotiations, charged that the six arenas do not comply with the Americans with Disabilities Act's (ADA) architectural requirements for new facilities.

The suit, which alleges that the arenas fail to provide spectators with disabilities a line of sight to the playing surfaces comparable to that of other, non-disabled spectators, seeks an order preventing Ellerbe Becket from continuing to design stadiums and arenas that do not provide such lines of sight. The Justice Department is also asking the court to impose a civil penalty. Disability-rights advocates in Washington, D.C., Boston, Portland, Philadelphia, and Buffalo have also filed private suits raising the same issue.

Some architects claim that it's difficult to comply with the ADA requirements because guidelines are not clearly written. There is further confusion because states have their own disability guidelines, but only three states' regulations, to date, have been officially approved by the Justice Department.

An Ellerbe Becket spokesperson, in response to the suit, stated, "The Department of Justice, the Paralyzed Veterans Association, and Ellerbe Becket all are focused on exactly the same goal—to have wheelchair patrons in sports arenas have all of their needs met. The issue is focused on the exact interpretation of those needs. In reality, this is truly an industry-wide issue affecting all stadiums and arenas."

Randy Edwards, senior vice president of Ellerbe Becket in Kansas City, said the firm is assembling a forum of architects and engineers who do sports work, sports team members, disability groups, and the Justice Department to analyze the ADA requirements and reach a consensus on how to best accommodate everyone. "We need to bring clarity to the issue," said Edwards. In the meantime, the firm has stated it will not stop any work in progress.

Under architectural standards incorporated into the law, stadiums must set aside at least one percent of all seating for wheelchair users, distribute the seating throughout the stadium, and provide lines of sight comparable to those of other spectators. "We believe architects—just like owners—are responsible for designing new facilities so that they are meaningfully accessible," said Deval L. Patrick, the assistant attorney general for civil rights. "In fact, architects are as well positioned as anyone to ensure that the new facilities are designed right, from the start."
Katherine Kai-sun Chia

E-Mail/Fax Back Poll

Let Us Know Your Opinion.

Comments:

May an editor contact you for further comments? ○ Yes.

Name:

Telephone:

Would You Risk Profits On A User-Satisfaction Survey?

A New York design/build team [Architectural Record, October, 1996, p.42] recently risked one-third of its profit on the outcome of a user-satisfaction survey conducted three months after the building was occupied. The 15 questions had been created jointly by the design/build team and a user committee.

Would you risk one-third of your profits based on a similar user-satisfaction survey?

○ **Yes** ○ **No**

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London

Europe To Get Biggest Tower Yet

Sir Norman Foster has unveiled his plan for the 1,265-ft tall, 92-story London Millennium Tower, to be the highest in Europe, on the 1.4-acre site of the Baltic Exchange, a shipping and trading center bombed by the IRA in 1992. The building's curved glass facade will enclose retail stores, restaurants, offices, trading floors, garden atriums, and residential units. The free-form plan of the building is a continuous series of curves in different types of glass that will respond to changes in sunlight throughout the year. A public viewing gallery and restaurant located 1,000 ft above the street will open up to panoramic views of London. Developed by Trafalgar House, the 1.5-million-sq-ft project is scheduled to be reviewed by the Planning Commission and Department of the Environment for height and massing. The main tower at Canary Wharf, at 800 ft, is currently the highest office building in Britain. ■

Licensing

Computerized ARE Exams Begin

Next February, the National Council of Architectural Registration Boards (NCARB) will launch a fully computer-based Architect Registration Examination (ARE), one of the first of its kind for professional licensing. "[It's] the envy of the world, and with the implementation of the computer-based test next year, we will have a vast array of almost limitless opportunities available through electronic media and technology," said NCARB President Darrell L. Smith

NCARB enlisted 13 architects nationwide to complete the development of the computerized [illegible] building-design vignettes. The [illegible] pretested and finalized enough [illegible] to meet the anticipated usage of [illegible] the next year. The exam will [illegible] by the computer.

[illegible] red by The [illegible] d and offered at [illegible] ough- [illegible]

Tucson, Arizona

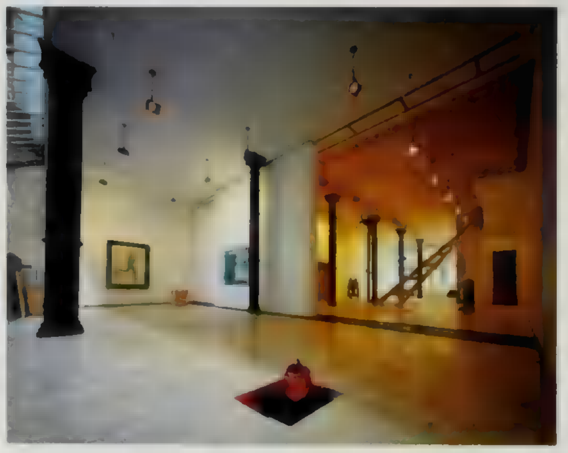
Sonora Museum Building Saves Energy

Energy conservation was the focus for the new 20,000-sq-ft gallery, restaurant, and gift shop building at the Sonora Desert Museum. Nestled in the heart of the Saguro National Park near Tucson, Ariz., the museum showcases over 1,600 indigenous plants and animals of the region. To preserve the natural setting, Tucson architect Les Wallach of Line and Space used large overhangs for shading and 24 outdoor spot diffusers with air supplied from an evaporative cooler's exhaust, so that the facility can accommodate visitors outdoors, even during Arizona summers. Each day 600 gallons of gray water is harvested from the bleed-off of the air washer on the evaporative cooler and reused in the toilets.

Wallach, whose company also served as the general contractor, devised cost-saving measures to stay within the $2.25-million budget. For example, native field stones used throughout the design were salvaged from a construction excavation at a local elementary school, saving the museum $40,000.
Danielle Beaugureau

New York City

Koolhaas Works Small In The Big Apple



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Dutch architect and author Rem Koolhaas has completed his first project in the U.S., the Lehmann Maupin Gallery in New York City's SoHo district. Although Koolhaas is generally known for his large urban projects that confront the chaos of modern cities, this project is a simple gesture of gypsum board and steel studs. One would hardly even suspect that it was designed by an architect, were it not for its moving mechanisms. Two 16-ft-tall wall sections on rollers allow the 3,500-sq-ft storefront warehouse space to be divided for exhibits of varying sizes.

Koolhaas expects artists to alter the color of walls, lighting, and surface of the space to suit their work. Gallery co-founder Rachel Lehmann noted, "By creating a space for more collaborative work between visual artists and architects, movie makers, and fashion people, among others, we encourage artistic collaboration and experimentation, new possibilities for traveling shows, and more work for artists." ■

News continues

KAWNEER DOES JUSTICE TO HISTORIC CHARM.

UPDATING THE PAST.

A downtown warehouse and one time department store in Savannah, Georgia, was selected to house the U.S. attorneys' offices, with one stipulation. Renovate.

The 1959 Altmayer Building needed a complete renovation and a totally new look. Savannah, a historical city, has a strict architectural review system, so Hansen Architects, had their work cut out for them.

They deliberated on the best possible solutions for the Altmayer building. Concluding that an attractive traditionally styled stucco exterior and Kawneer's classic architectural windows would fit within the guidelines for the historic district, they sought counsel from the Kawneer Remodel team. Kawneer recommended their Sealair® 8425T (Thermal) Double Hung Windows with true muntins for the first floor, Sealair® 5315 Single Hung Windows with applied muntins for the top three floors, plus Series 500 Wide Stile Doors at both entrances for security.

The verdict: the Altmayer Building would enjoy a long term with the newly remodeled exterior and Kawneer windows and doors. Kawneer Remodeling. It's what's going on.

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Netherlands

Two New Projects by Adriaan Geuze Revitalize Dutch Cities

Over the past few years, Adriaan Geuze, an "engineer of the landscape," has reinterpreted the profession of landscape architecture through his Rotterdam-based office, West 8. Two recent projects, an urban square in Rotterdam and an "urban strategy" for the redevelopment of two peninsulas on the eastern portion of the Amsterdam docks, are both currently under construction.

The Schowburgplein theater square in Rotterdam (model photo, right) is conceived as an urban stage, surrounded by theaters, cafes, restaurants, and cinemas. A mosaic of materials on the ground defines different zones of activity. A 210-ft-long wood bench is the ultimate theater piece and the lighting is to be manipulated directly by the users, via insertion of coins into one of the four, 105-ft-high, hydraulic lighting masts. The three large ventilation towers from the parking garage are other vertical accents that are meant to echo the nautical imagery of Rotterdam.

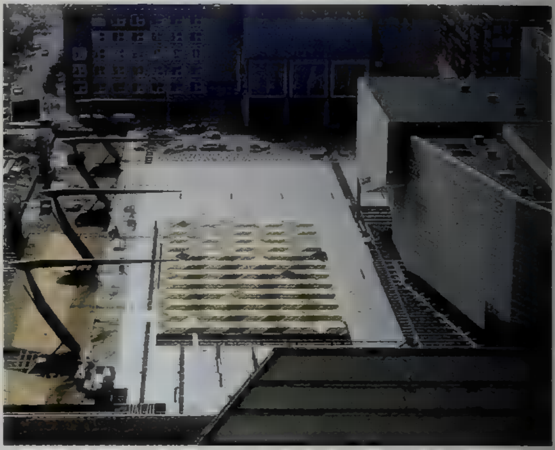
In Amsterdam, on the Borneo and Sporenburg peninsula docks, some 2,500 units of low-rise housing are juxtaposed with three immense sculptural blocks, which act both as landmarks and as connection nodes to the vast, flat landscape of the IJ-meer (construction photo, far right). Many developers as well as private individuals own the property, and several architects are designing the buildings, including Van Berkel & Bos, Steven Holl, Herzog & de Meuron, J.L. Mateo, and OMA's Rem Koolhaas. The goal for the project, however, is a unified diversity.

Geuze's concern in these projects is "maintaining and processing the tradition of so-called functionalism. . .a functionalism effectively engaged in a campaign to promote the programmatic thought that architecture could directly influence the contents of a culture rooted in diversity, technology, and social instability." He says urban space can no longer be thought of as static or closed, but instead as open-ended, dynamic—a flowing landscape.

According to Geuze, "New public space will manipulate its users to the extent that they will immediately be aware of their behavior, that they can no longer revert to programmed acts. . . .This [type of] space transforms anonymity into exhibitionism, spectators into actors. It is not a matter of design, of the beauty of dimensions, materials and color, but of the sensation of a discrete culture created by the urbanite."
Kelly Shannon

© Peter de Ring

Adriaan Geuze's project for the Schowburgplein square in Rotterdam.


In Amsterdam, on the Borneo and Sporenburg docks.

Government Spending 1997

Construction Budgets Are Up, But It's Not All Good News

Most federal building programs will benefit from increased construction budgets in the fiscal 1997 round of appropriations. But funds to design new projects are in much shorter supply. In the omnibus spending bill that President Clinton signed on Sept. 30, the General Services Administration's (GSA) new construction program climbs 21 percent, to [illegible] million. That includes funds for 22 projects, mostly courthouses. Lawmakers provided [illegible] for new starts in Fresno, Calif.; [illegible] Orlando, Fla.; Erie, Pa.; and [illegible] repair and [illegible] million. [illegible] new starts. GSA is encouraged by the numbers, says Robin G. Graf, controller of the agency's Public Buildings Service. "The need for the program is recognized and is being supported by this Congress and the administration," he says.

Congress continues to put pressure on courthouse costs, trimming 1997 court projects 10 percent from GSA's proposed levels. Graf says the agency is assessing whether the cuts will pose problems. Seeking future economies, appropriators also requested a revised federal-court design guide by April 1, 1997. Other federal building programs are going up in 1997. The Department of Veterans Affairs' major construction account, which funds hospitals and clinics, will jump 85 percent, to $251 million. The Federal Bureau of Prisons' buildings account received an 18 percent increase, to $396 million. The bureau, part of the Justice Department, is expected to get enough money to build two new prisons per year. The 1997 installment includes $197 million for prisons in California and the mid-Atlantic region. Bureau officials were investigating sites in eastern Kentucky for the mid-Atlantic facility. The increases are welcome, but the focus will soon shift to fiscal 1998, said Graf. *Tom Ichniowski*

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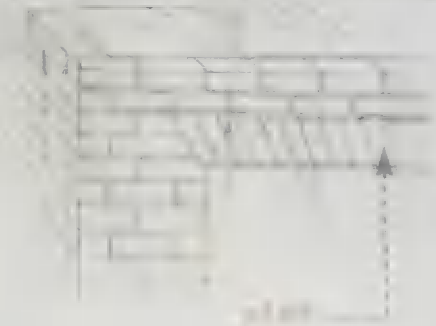

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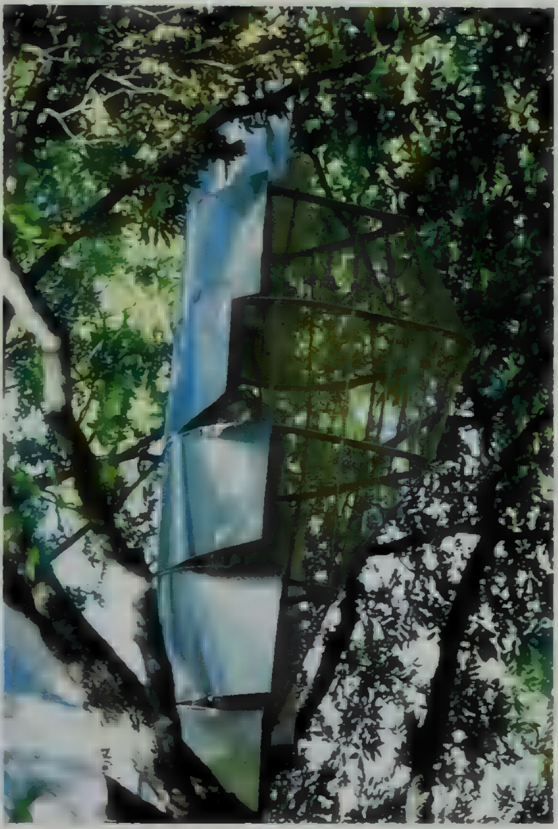
New York City

New Home for Research Center

The completed renovation of three floors of the Schermerhorn Extension at Columbia University will serve as the new 18,000-sq-ft core facility for the Center for Environmental Research and Conservation. The Center, designed by BNK Architects and The Stein Partnership Architects, houses offices, student areas, a library, a lounge, research laboratories, and a rooftop greenhouse. According to the architects, the project focused on being environmentally responsive at both local and global levels. The architects used locally obtained materials to reduce transportation energy, materials that require minimal energy for manufacture, waterborne finishes rather than solvent-based ones, and they avoided materials with adverse processing residue. Major operating savings will be captured by using daylighting and a low-level of ambient lighting supplemented by task lighting when necessary. The total lighting load, 1.3 watts per sq ft, is almost half of that allowable in the New York State Energy Code. ■

Dallas

Up a Tree With $5,000



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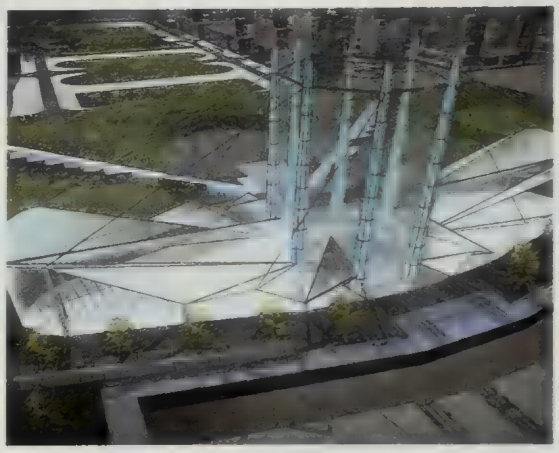
What do you get when you give an architect $5,000 and a live tree? The Dallas Arboretum and Botanical Garden received some very unusual proposals in their tree-house competition, co-sponsored by the Dallas AIA Chapter. Ten winning entries were constructed without permanent attachment or damage to the trees. Jill Magnuson, director of public relations at the arboretum, said that each design team began with an identical set of requirements to serve as "a point of departure for exploring the formal, practical, and conceptual possibilities of a tree house." The structures, although not inhabitable for liability reasons, enhanced the arboretum's educational program for children and boosted summer attendance by more than 75 percent. Participating architects and artists included F/M Associates, Four Seasons Decorations, Good Fulton & Farrell Architects, artist David Hickman, The Hillier Group, HKS Inc., Lake Flato Architects, Lockwood Andrews & Newman Inc., Omniplan Architects (left), and RTKL Associates Inc. ■

When color counts...

Shenzhen, China

Manhattan's Lee/Timchula Wins City Center Competition



The firm of John M.Y. Lee/Michael Timchula of New York City beat out five international finalists including B+H Architects of Canada, S.C.A.U. International of Paris, and Kenzo Tange Urban Architectural Design Research Institute of Tokyo, to design a 86.1-million-sq-ft multi-use development for Shenzhen, China, a metropolis of 3.5 million people neighboring Hong Kong's new territories. The 477-acre, 100-city-block area will support offices, hotel, commercial/service facilities, a convention center, cultural and sports facilities, and a city hall.

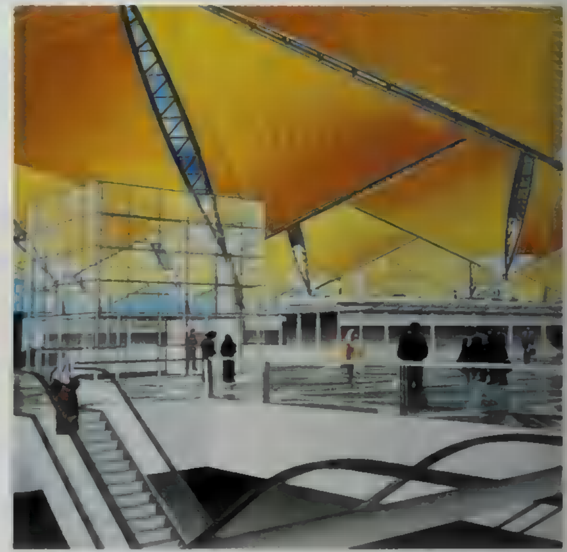
The jury selected Lee/Timchula's proposal because it creatively resolved program requirements in keeping with "feng shui," the Chinese art of placement.

In addition, the proposal allowed for sustainable environments: The city hall and the covered pedestrian walkways will use photovoltaic roof panels to collect and store energy for lighting and heating. The firm has begun to codify the zoning requirements for the local government, and construction of the city hall is expected to occur after that. ■

Chicago

"Building for Air Travel" Exhibit Will Tour Until 1999

The exhibit "Building for Air Travel: Architecture and Design for Commercial Aviation" at The Art Institute of Chicago until January 5, 1997, is the first in-depth look at the architecture and design of the airline industry. The exhibit will travel to museums and airports around the world through 1999. ■



Interiors designed by Walter Dorwin Teague: Boeing 377 Stratocruiser, interior with child in berth, 1946 (photograph). Interior of the New Kuala Lumpur International Airport, main terminal, 1993-1998. Kisho Kurokawa, architect, with Akitek Jururancang (Malaysia).

Las Vegas

Air Terminal at McCarran International Gets Its Wings

The use of pre-engineered space frames to serve as porte-cochères while simulating airplane wings was the key design element utilized by Las Vegas-based JMA Architecture Studios in the design of the 28,000-sq-ft Las Vegas Executive Air Terminal at McCarran International Airport.

The porte-cochères, located on both the pedestrian and flight approach, protect people from wind and summer heat. Made of translucent polyester fabric, the porte-cochère at the front entrance extends 76 feet, providing a 40-ft high clearance. The canopy shading the tarmac is an abstracted eagle; two stanchion "legs" support a triangular "body," with the point representing the eagle's beak.

The new $9-million terminal, constructed with tilt-up concrete and prefabricated embossed metal panels over a steel-frame structure, includes an office complex with conference rooms, sleeping quarters, a flight-planning room, maintenance facilities, and a 18,180-sq-ft hangar. *Danielle Beaugureau*

News Briefs

Italians to redevelop gallery in Victoria, Australia

Milan's Mario Bellini, working with the Melbourne-based architectural firm Metier 3 Pty Limited, has been appointed to redevelop the National Gallery of Victoria, Australia. The $80-million project, to be completed in 1999, is one of the Victoria government's major capital investments in the arts. Other architects considered included Pei Cobb Freed & Partners, Arata Isozaki, and Gae Aulenti.

Chrysler award winners

Architects Craig Hodgetts and Ming Fung of Los Angeles, graphic/product designer and editor Tibor Kalman of New York City, and architects Mack Scogin and Merrill Elam of Atlanta-based Scogin Elam and Bray Architects were among the recipients of the $10,000 Chrysler Award for Innovation in Design. Launched in 1993, the award is presented annually by the Chrysler Corporation to "socially responsible" individuals and companies reaching beyond the "traditional boundaries of design."

Architectural photographer honored

Steve Rosenthal, a Boston-based architectural photographer, was presented the 1996 Architectural Photography Award by the American Society of Media Photographers at the Society's first biennial conference in Orlando, Fla. Trained as an architect, Rosenthal has specialized in architectural photography for over 25 years and has been widely published in books and magazines. He is currently collaborating with writer Michael Crosbie on a series of children's books on architecture to be published by Preservation Press.

Winner of library competition

The Kansai-kan of the National Diet Library Competition awarded first prize and 50-million yen [over $46,300] to Japanese architect Fumio Toki. The competition attracted 493 submissions from 42 countries. Toki's submission, chosen by the jury because it is "quietly distinctive in contrast to many works with highly assertive forms," placed stacks and a reading room below ground and defined the entry approach with a sawtooth-roof garden. The project, sited on 10 acres, will be the core cultural facility for Kansai Science City.

Bioclimatic houses ready to go

Twenty-five experimental houses were selected for construction in the International Design Competition for Bioclimatic Houses, Tenerife, Canary Islands, Spain. Sponsored by the Institute for Renewable Energy Sources, the Island Government of Tenerife, and The College of Architecture of the Canary Islands, the competition required entries to use "ecologically sound materials and methods." David Dobereiner, of Rockridge Design in Oakland, Calif., in association with Dan Chin, was the only winner from the U.S. His entry, consisting of three vaulted roof forms that channel the sun and wind through the house, solar roof panels, and a wind turbine, will be built in 1997. Scientists will live in the houses for one year to monitor and evaluate the designs. ■

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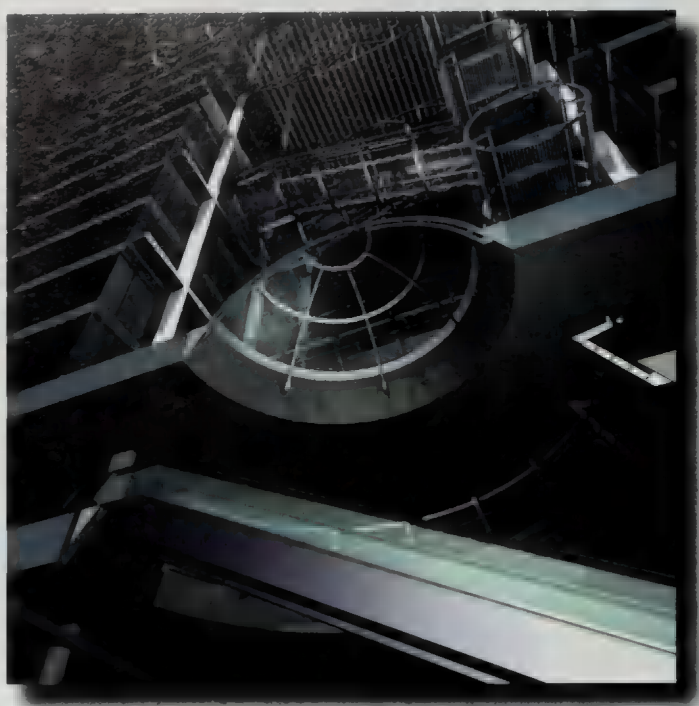

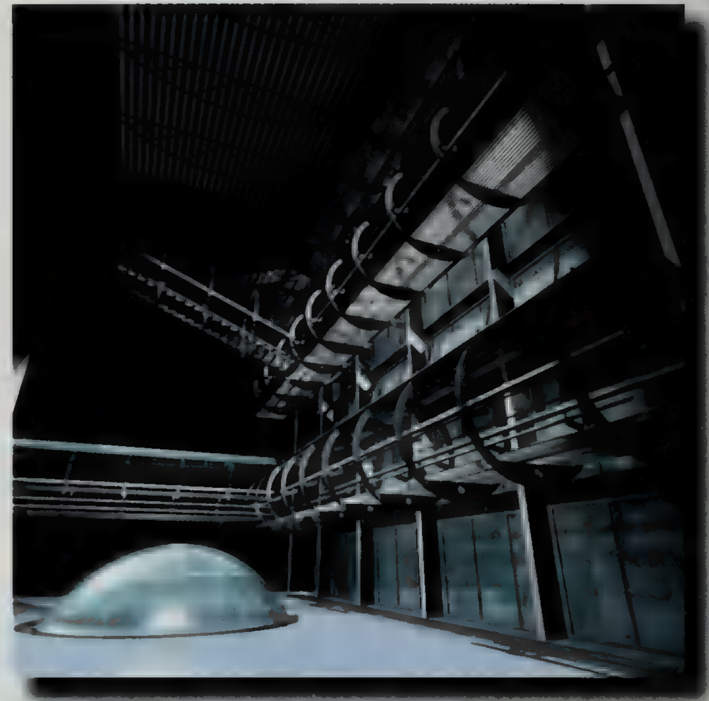

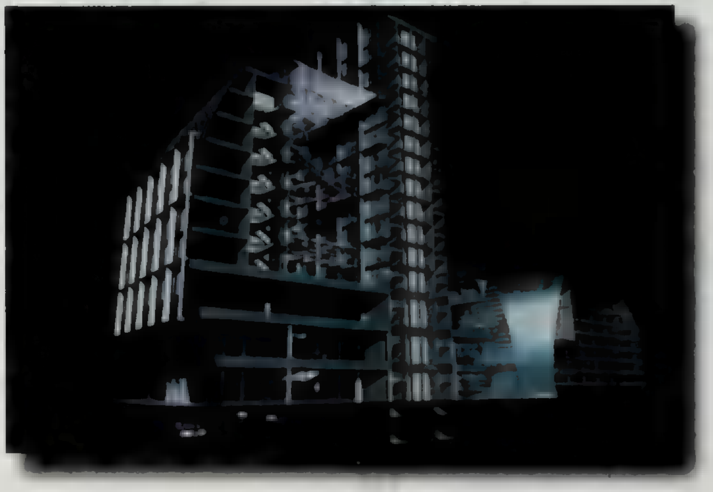

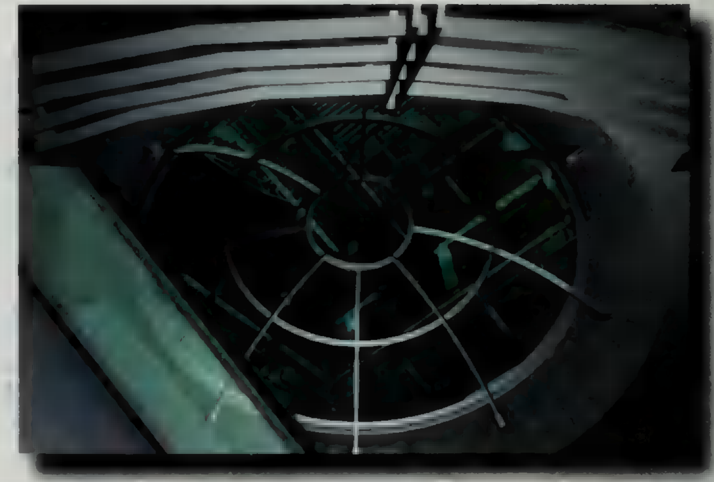

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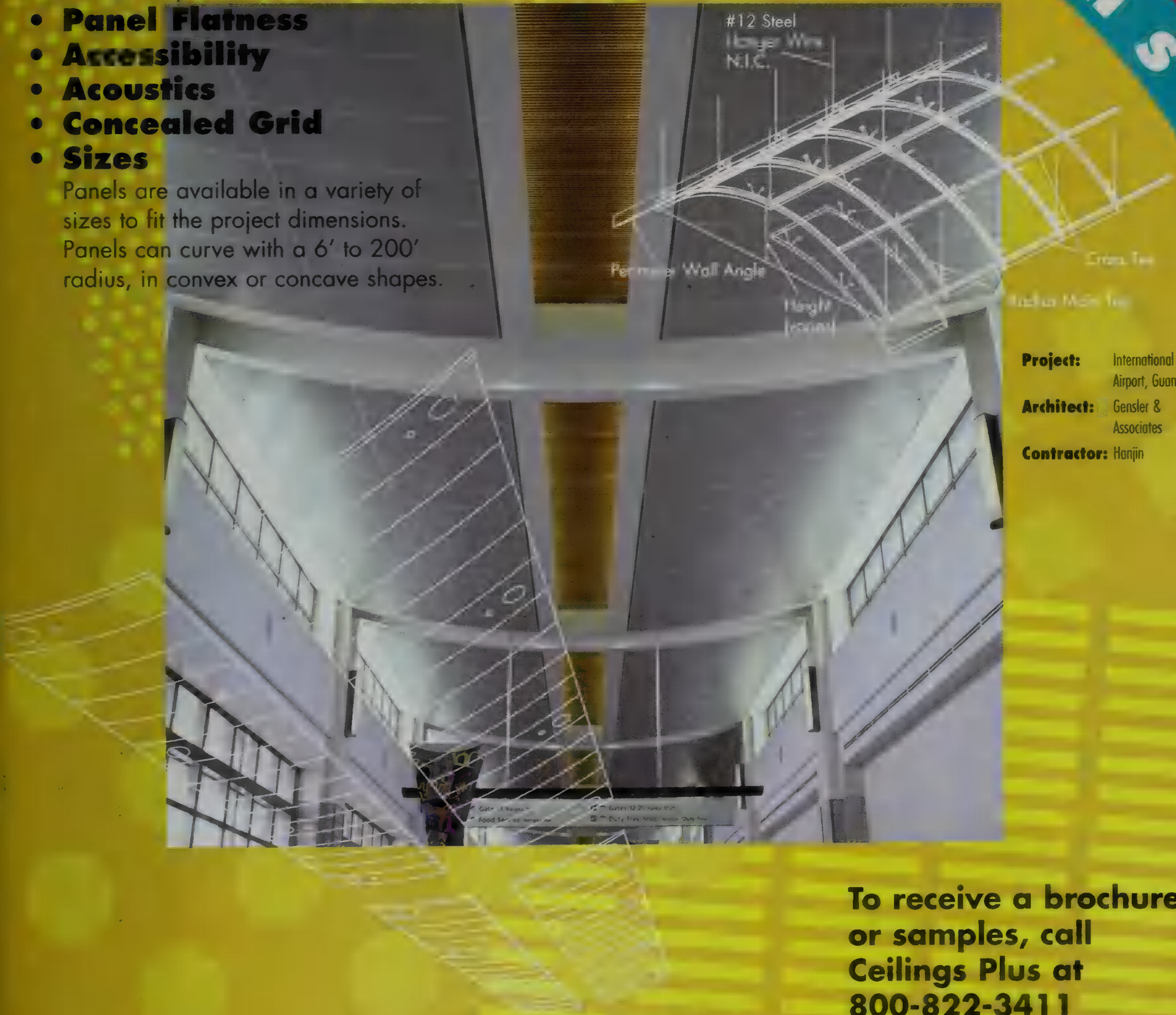

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Independent testing conducted by California State University of Berkeley, California, confirmed that there was no red rust formation on ZT-coated stainless after 2400 hours of constant exposure to a 5% salt spray solution. Other metallic alloy coatings commonly perceived to be competitive products produced red rust in less than half that time.

VIROMET and VIROTIN retain all of the inherent mechanical properties of their core metals (304-18/8 stainless steel and prime carbon steel). Solderability, an outstanding characteristic of the Terne alloy, is retained with the ZT-coated products. There is no degradation resulting from UV exposure.

For additional information...

Regarding metallurgical performance contact:
Dr. Mehrooz Zamanzadeh
Regarding CAD-based design assistance contact:
Ed Thomas, VP of Sales

Follansbee conducted exposure tests for over 5 years with over 50 different alloy-based metal combinations in accordance with strict ASTM guidelines prior to selecting VIROMET and VIROTIN as the best performers.

In addition to extensive laboratory testing, Follansbee exposed the above sample to intensive beach-front conditions for more than 5 years at a test site in Topsail, North Carolina.

The new ZT® coating gives VIROMET® and VIROTIN® special characteristics not found in other roofing metals

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VIROMET owes its excellent corrosion resistance to the insoluble surface oxide film that forms upon atmospheric exposure. All metallic alloys produce protective surface oxides. The coating factors which determine longevity are solubility, adherence, thickness and rate of reduction. VIROMET has been engineered to excel in all of these critical aspects.

VIROMET is universally functional. It performs exceptionally well in marine atmospheres while offering the architect a dependable corrosion resistant product for use in both rural and industrial environments.

Like Follansbee TCS,® VIROMET does not require painting. VIROMET is designed to weather naturally upon atmospheric exposure. Since VIROMET is suitable for application in a broad spectrum of environments, predictability of color is referred to in earth tone ranges. Typically, VIROMET forms a gray oxide; however, depending upon environmental characteristics, other colors such as whitish gray to light bronze are attractive possibilities.

VIROTIN®

excellent corrosion protection and the choice of color

VIROTIN was developed to mirror all of the time tested qualities of the original Terne (tin) roof used extensively throughout both colonial and modernistic America. VIROTIN also produces the same aesthetic and performance qualities as the original "tin" roofs and thus provides an excellent roofing metal for restoration projects. The ZT coating on VIROTIN provides corrosion resistance, solderability and an excellent affinity for paint.

VIROTIN, like Terne, offers the Architect a wide range of color potentials which contribute to aesthetics and architectural statement. Unlike the glossy, plastic looking coatings applied to modern day metals, the painted surface of VIROTIN replicates the dull oxided and stately appearance of early Americas tin roofs.

About the ZT® alloy...

Developed and patented by Follansbee, the ZT alloy is a two-phase metallic coating of zinc and tin, a combination not previously used on architectural metals. The coating may contain small amounts of other metals to modify its physical properties. However, these secondary components contribute primarily to the strength of the coating and not to its corrosion resistance. The bonding of ZT to both carbon and stainless steel is excellent, forming a tight, durable coating. In testing, Follansbee discovered that, by adding zinc in the amounts of at least 20% of the total alloy, the corrosion resistance of the sheet is significantly increased in chloride-containing environments.

The ZT alloy is anodic under corrosive conditions and inhibits corrosion of any exposed metal near the zinc/tin coating. As a result, minor discontinuities in the coating do not result in the detrimental oxidation of exposed metal.

Follansbee coats both VIROTIN® and VIROMET,® with its new ZT® alloy. While VIROTIN must be painted immediately after installation, VIROMET does not require painting and weathers with exposure to the atmosphere.

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The unique qualities of these new Follansbee roofing metals make them the ideal material for use in hundreds of roof drainage and weathersealing applications and for complete roof systems employing any of the traditional or contemporary architectural metal roof designs. As many architects have with TCS and Terne, they can specify VIROMET and VIROTIN for various vertical wall designs. Specifications for standing and flat lock seam installation are covered in Follansbee's Sweets Catalog. Also appearing in Sweets are guidelines for painting VIROTIN with TERNE-COTE,® the two-coat painting system recommended by Follansbee.

These new roofing metals are strong and ductile, having high yield and tensile strengths as well as workability. They are solderable, providing weathertight joints where required in joints and in flashing around roof perimeters and penetrations.

The building owner is thus assured that these critical areas of potential water penetration will remain tight and that joints will not be subject to premature breakdown and delamination as is often the case with sealants.

VIROMET and VIROTIN are available in gages and sizes for all roofing and weathersealing applications. Both metals are also available in many preformed shapes that enable the roofer to cut his application time significantly.

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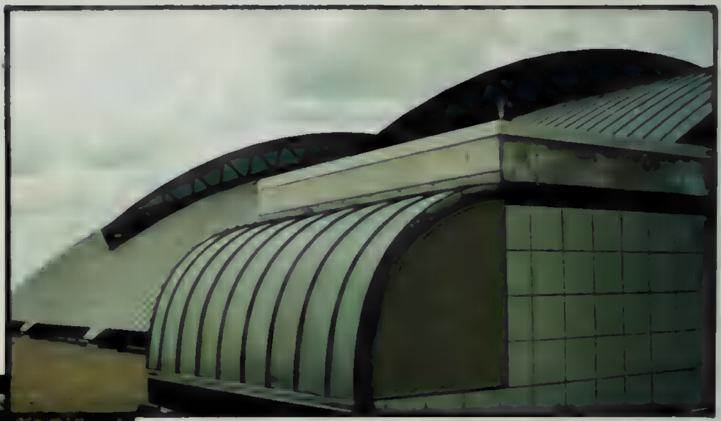

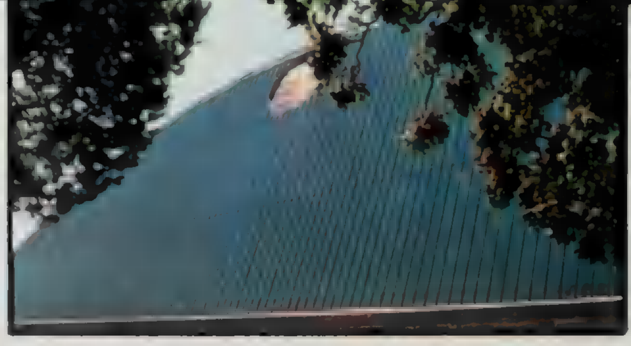

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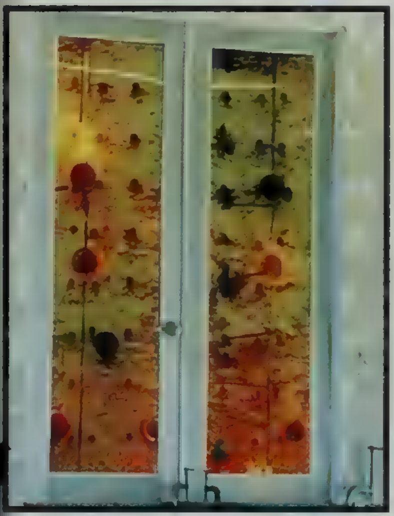

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Buildings must have been designed by architects registered in the U.S. and must have been occupied after January 1, 1993. Both new buildings and projects involving preservation/rehabilitation will be considered.

Awards will be presented in May 1997 at the annual AIA convention in New Orleans. Two national award winners will receive a $2,000 cash prize. Winning projects will be portrayed in a special booklet to be published and distributed internationally by The American Institute of Steel Construction, Inc. In addition they will be featured in a special issue of AISC's Modern Steel Construction magazine.

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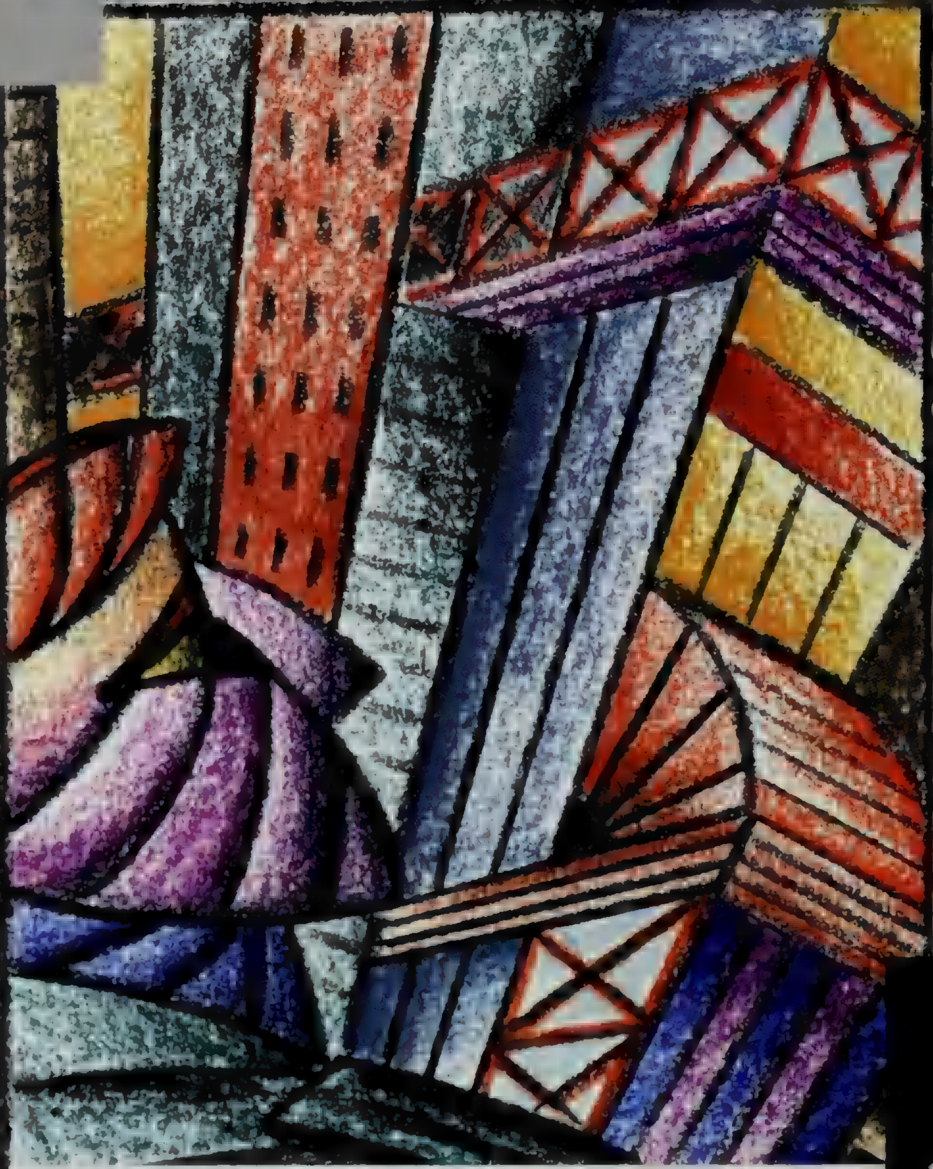

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1. New expanded multiline text object has automatic word wrap and flexible text alignment.

2. Easy to change the style attributes of individual text characters such as color, height, obliquing angle.

3. New text style dialog (DDSTYLE) gives more access to create, edit, and set text styles.

4. Easier to underline and overscore text.

5. Easier to edit text with integrated, dialog-based text editor.

6. Cut, copy and paste in the MTEXT editor.

7. Object grips can be used to modify the width of paragraphs.

8. AutoCAD text now supports True-Type and PostScript® Type 1 fonts.

9. Spell Checker includes standard and custom dictionaries.

22. You can suppress the first or second dimension line.

23. Baseline and Continue dimensioning have been streamlined.

24. Baseline and Continue dimensioning work on angular dimensions.

25. DDIM dialog box allows preview prior to input and improves access to properties.

26. Dimensioning better follows industry and international standards, including ANSI, ISO, and JIS.

27. Dimension styles are more flexible and easier to create.

28. Override feature allows you to change properties on a per-dimension basis.

29. Geometric tolerancing creates and edits tolerance control frames automatically.

43. The ability to create and use custom linetypes with text and shapes.

44. Assign linetype scale factors per object (versus per drawing).

45. ISO Compliance of linetypes.

46. DDMODIFY has been dramatically improved.

47. Direct Distance Entry eliminates laborious coordinate keyboard entry; allows you to move the mouse in desired direction and enter a single distance value.

48. Object snap now snaps to extended intersections.

49. Running object snap dialog box is now transparent.

50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.

63. Boundary edges don't need to physically cross the objects you wish to Extend.

64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.

65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.

66. New overlay option in the Xref command avoids circular references.

67. The Xref command now searches the AutoCAD path to find referenced drawings.

68. Purge your drawing at any time.

69. Easy to create construction lines that extend infinitely in both directions (XLINE).

70. Easy to create construction lines that extend infinitely in one direction (RAY).

85. Solid profiling comman allow you to convert 3D to 2 (SOLPROF/SOLDRAW/SOLVIE

86. Create regions.

87. Extrude along a path cur

88. Determine mass proper of a model.

89. Fillet and chamfer so

90. Faster solid model processor and smaller mode sizes than AME.®

91. Control the display tessellation lines (isolines).

92. Import and export ACIS

93. Translate AME models i R13 solids.

94. Rendering is faster and ea

95. New colored spotligh

96. Phong shading suppor highlights from colored ligh source.

97. Material Library and Ec included.

For all those who hav
"Can AutoCAD Release 13 really mak

10. Easily import a TXT file.

11. Create stacked fractions for better readability.

12. Single-line MTEXT editor for DOS users.

13. Map slower fonts to faster ones (FONTMAP).

14. Fill in text fonts (TEXTFILL).

15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT).

16. Move, rotate, erase, copy, mirror, stretch, or scale each text object.

17. Automatically stack fractions in dimensions.

18. Inferred linear dimensioning automatically distinguishes between horizontal and vertical dimensions and repositions text.

19. Creating dimensions requires fewer steps.

20. Dimension Style Families [illegible] define dimension [illegible] one [illegible]

30. Easier to modify dimensions.

31. Dimensioning has its own units settings.

32. Create splined leader lines

33. Create multiple lines of text in leaders.

34. Automatic island detection finds a complete boundary with one pick.

35. Associative hatching automatically updates hatch to modified boundaries.

36. The restructured BHatch dialog box is simpler and faster to use.

37. Drive the BHATCH command from the command prompt if desired to run scripts.

38. Create a hatch boundary manually on the fly.

39. Easily edit hatch properties without redrafting the hatch.

40. New ISO compliant hatch patterns included.

41. Load linetypes from within the Layer dialog box.

42. Visual representation of linetypes for selection before loading.

51. New FROM object snap can reference a point from within a command.

52. Object Cycling insures that you select the correct object every time.

53. Improved Fillet command can be used to cap parallel lines.

54. Fillet between a line and a polyline.

55. Fillet without trimming the existing geometry.

56. Fillet that doesn't cancel when you miss the object.

57. Chamfer by length and angle.

58. Chamfer without trimming the existing geometry.

59. UCS restrictions are gone for fillet and chamfer commands.

60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).

61. Cutting edges don't need to be on the same UCS as the objects you're trimming.

62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).

71. Group objects together by name with object grouping (GROUP).

72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).

73. Intersection clean-up for multiple parallel lines simplifies wall creation.

74. Save multiple MLINE styles for quick access.

75. Fill in parallel lines with a different color (MLINE).

76. True geometric Ellipses.

77. Snap to the center or quadrants of an ellipse.

78. Create elliptical arcs.

79. Create NURB splines.

80. Specific editing commands for greater control of new splines.

81. Explode blocks with varying X and Y scale factors.

82. Solid modeling included in base AutoCAD.

83. Create ACIS solids with solid primitives.

84. Perform Boolean operations on solids and regions (union, intersect, subtract).

98. Assign materials for sha by layer.

99. Import and export 3DS

100. Render to file with im only; supports over a doz new file formats.

101. Windows standard G

102. Standard Toolbar con icons for high-usage draw management and drawin editor navigation function

103. Easy to create and m custom toolbars.

104. Toolbars can float be docked.

105. Object Properties To offers quick access to lay color and linetype function

106. Easy to understand i with tool tips.

107. Drag and drop toolt editing.

108. Preview drawings be opening to speed up identification and avoid ope the wrong file.

109. See a visual represe tion of WBLOCKS before insert them.

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buttons float to the top
lyout.
croll bars permit easy
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nproved user feedback
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et a new current layer
from layer control feature
bject Properties Toolbar.
reeze, thaw, turn on or
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feature of the Object
ties Toolbar.

Command prompt is now
eable, resizeable and
ble window.
Copy the command
to the clipboard.
AutoCAD has added a
engine to find drawing files.
Aerial viewer has been
ed and is more user friendly.
Don't have to reload
with each drawing load.
Contains a simple to use
e fly icon editor.
Regular and full menus
l.
Ability to retain Release 12
menu and command line
o ease learning transition.
Full on-line documentation
e on CD-ROM.
Task-oriented
entation.
mproved on-line Help.
On-line command
nce.
On-line Tutorial steps
h basic features.
On-line Quick Tour shows
AD's capabilities.

134. On-line What's New shows overview of new features in Release 13.
135. Cue Cards walk you through basic CAD operations.
136. CD-ROM installation is faster, easier.
137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95
138. Typical, Custom or Minimum install options.
139. Configuration files are now portable and ASCII.
140. No more ACAD.PWD file.
141. The ability to turn off the automatic Backup files.
142. Improved control over memory management.
143. OLE 2.0 with drag and drop allows you to dynamically embed spreadsheets, video clips, Word documents into AutoCAD drawings (or AutoCAD drawings into a Word document).
144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
145. Read drawing files created in previous AutoCAD releases.
146. Save as a Release 12 drawing file.
147. ARX(object-oriented development platform) allows for tighter integration with 3rd party software.
148. Broad peripheral support.
149. Undo support for external database links and operations.
150. Output to STL format.
151. Xref and Block support for non-graphic links.
152. ASI access to ASE link mechanism.
153. ASILISP contains new LISP functions for accessing external databases.
154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
156. Real-time Pan.
157. Real-time Zoom.
158. Incremental saving of the drawing file.
159. Faster regens due to more drawing data stored in memory during working session.
160. No regen on Window resize.
161. Optimized output on selected Windows system printer drivers.
162. Improved HP GL/2 plotting performance on Windows and DOS platforms.
163. ADS applications run faster.
164. AutoLISP programs run faster.
165. Pager included for large drawing memory management.
166. Multiple sessions of AutoCAD.
167. Windows 95 user interface.
168. Support for Long Filenames.
169. Supports Universal Naming Convention (UNC) for Files and External References.*
170. Supports UNC for configuration files.*
171. Uninstall from Windows 95 or NT through the control panel.*
172. Email enabled for MAPI compliant programs allows users to attach DWG files to an email.*
173. DOS, Windows 3.1x, Windows NT 3.51, Windows 95.
174. Windows NT on Alpha Systems.
175. UNIX®, Sun® Solaris,® HP-UX,® SGI IRIX,™ IBM-AIX.®
176. Ability to generate .DWF files and make your drawings available over the Internet.

We understand. You may not have the time to read them all. But, suffice it to say that we have added scores of new features to AutoCAD® Release 13 to make your life on the job easier and less labor intensive than ever before.

Case in point: Release 13 was designed for both Windows 95® and Windows NT,™ letting you leverage your knowledge of Windows and giving you access to the features you use the most. In fact, R13 on Windows 95 and Windows NT lets you work 20% faster than if you were working on Windows® 3.1x.

Release 13 also supports AutoCAD Runtime Extension (ARX) applications from developers like KETIV Technologies, Inc., ARCHIBUS, Inc., and Softdesk, Inc. These next generation tools use the object-oriented database in R13 to provide you with a seamless and associative design environment. Plus, R13 has Internet support, so now you can view, send, and share design content over the Internet.

So look into award-winning AutoCAD Release 13 software. Hundreds of thousands are already enjoying its 176 new features. How many more reasons do you need?

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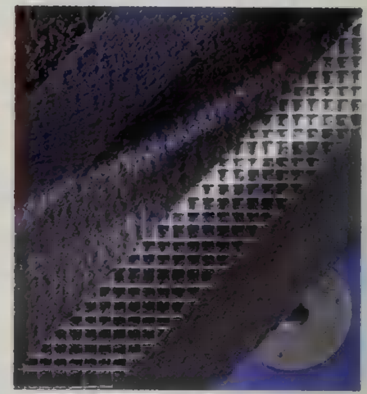
The Boston Home historical renovation, Boston, Massachusetts. Architect: Richard Heym Associates/Boston, MA



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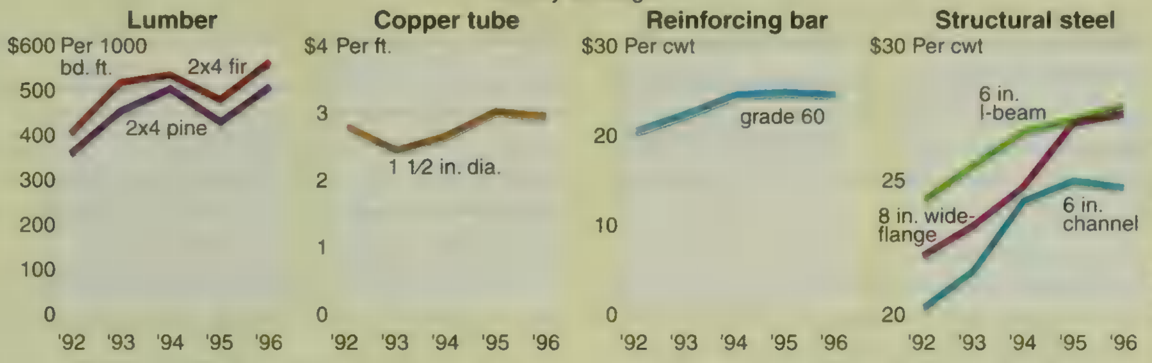
Indicators

Ups and downs in commodity prices

Over the last few years, many commodities gained pricing ground lost in the extended construction recession. With different construction types blowing hot and cold, commodity prices are today more mixed. Reinforcing bar, significantly affected by highway volume, is dipping even as some structural steel maintains pricing strength. Pricing in copper also reflects a slackening market. Analysts have been surprised at lumber's price strength as housing construction has recently gone flat. ■

Prices of Selected Commodities

20-city average



Source: ENR Construction Economics Dept.

Figures for 1996 as of late September

Chart by Leanor Glynn

Big metro markets are pricier

The consensus of analysts is that both labor and commodity prices are under control. Still the building-cost index in almost every metro area tracked rose this year, whereas in recent years, some have risen while others have fallen. Only San Francisco and Los Angeles showed declines in 1996. Furthermore, price rises are substantial, especially in Midwest cities like Kansas City, St. Louis, and Chicago, which have enjoyed extended construction growth. Atlanta's gain may be temporary, reflecting last-minute Olympics' preparations. In the East, Baltimore and Pittsburgh show strength.

Labor shortages are now widely reported, but hourly rates have remained near the inflation rate so far. But with many building-construction types slated for growth next year (see architectural market forecast, following pages), labor rates may begin to show spot rises. Also, manufacturers have been reluctant to expand capacity, so spot shortages and price rises may develop more often in 1997. ■

Building Cost Indexes

	12/91	12/92	12/93	12/94	12/95	5/96	10/96	% change from 5/96	% change from 12/95
Atlanta	2278.83	2404.75	2477.13	2480.55	2412.12	2470.10	2609.19	+5.6	+8.2
Baltimore	2508.06	2607.76	2673.24	2830.66	2818.21	2856.29	3023.54	+5.8	+7.3
Birmingham	2189.75	2279.26	2352.15	2439.28	2509.21	2533.69	2687.71	+6.1	+7.1
Boston	3102.31	3355.57	3539.63	3601.94	3549.18	3569.19	3633.62	+1.8	+2.4
Chicago	3034.72	3162.99	3325.70	3415.62	3446.51	3470.99	3691.07	+6.3	+7.1
Cincinnati	2674.15	2817.16	2920.20	3001.15	2942.02	2953.42	2962.92	+0.3	+0.7
Cleveland	2903.81	2903.1	3088.76	3218.65	3273.15	3305.79	3386.36	+2.4	+3.5
Dallas	2215.88	2278.21	2307.62	2448.62	2433.04	2474.70	2606.68	+5.3	+7.1
Denver	2375.26	2438.39	2501.00	2608.72	2661.49	2711.27	2921.38	+7.7	+9.8
Detroit	3046.92	3136.74	3278.20	3424.95	3459.88	3485.99	3705.84	+6.3	+7.1
Kansas City	2637.20	2677.21	2873.20	2916.25	2889.17	3013.84	3159.94	+4.8	+9.3
Los Angeles	3097.83	3198.66	3359.03	3420.42	3427.26	3412.81	3398.41	-0.4	-0.8
Minneapolis	2711.5	2811.14	2989.48	3131.05	3129.52	3145.84	3322.33	+5.6	+6.1
New Orleans	2260.52	2360.24	2330.86	2469.21	2499.08	2560.01	2649.12	+3.4	+6.0
New York	3997.91	4151.28	4343.76	4458.36	4557.44	4603.96	4685.72	+1.7	+2.8
Philadelphia	3169.81	3130.58	3532.34	3480.78	3563.18	3563.18	3641.74	+2.2	+2.2
Pittsburgh	2807.73	2954.64	3038.97	3218.37	3287.92	3326.02	3522.98	+5.9	+7.1
St. Louis	2686.93	2743.01	2840.58	3091.81	3089.59	3134.74	3314.49	+5.7	+7.3
San Francisco	3270.90	3298.09	3463.34	3519.17	3561.60	3534.30	3516.40	-0.5	-1.2
Seattle	2715.04	2787.74	2948.18	3024.48	3046.50	3088.93	3098.43	+0.3	+1.7
20-City avg.	**2751**	**2834**	**3009**	**3110**	**3128**	**3161**	**3277**	**+3.7**	**+4.8**

Source: Engineering News-Record, Construction Economics Department. The Building Cost Index combines 68.38 hours of skilled labor weighted by the 20-city average of bricklayers', carpenters', and structural ironworkers' rates, plus 25 cwt of standard structural steel shapes at the mill price, plus 22.56 cwt (1.128 tons) of portland cement spot-priced locally, plus 1,088 board-ft of 2 by 4 lumber spot-priced locally. The base year is 1913 = 100. To compare a given city's costs by percent, divide one index into the other. Example: the index for a city for one period (200) divided by the index for an earlier period (150) yields 1.33, which means the costs in the later period are 33 percent higher than the earlier period. Likewise, the earlier period's costs are 75 percent of those in the later period (150.0 divided by 200.0 = .75 or 75 percent).

Short Takes

• Project-management survey: With skilled managers in short supply, analyses of their skills and duties have proliferated. Consulting firm Zweig White & Associates' contribution is the "1996 Project Management Survey," which includes coverage of organizational structure, project-manager duties, responsibilities, and compensation, as well as "challenges and complaints." It costs $254 and is available at 800/466-6275 (phone) or 508/653-6522 (fax).

◆ Toilet score: women: 340; men: 55: Women, long resentful of endless restroom lines at busy public facilities, may at last see—pardon the expression—relief. Ellerbe Becket, architect of a ballpark in Phoenix for the Arizona Diamondbacks, plans 340 toilets for women, compared to 55 for men. (Men do get 218 urinals.) The architect says toilet-room capacity should be enough for even sell-out crowds of 48,500.

• Source for used building materials: A new association has formed to represent organizations and companies that salvage and redistribute used building materials such as windows, doors, lumber, and plumbing fixtures. It offers guidance to materials sources and how to use them. Used Building Materials Association, 2-70 Albert Street, Winnipeg, Manitoba R3B 1E7, Canada; 204/947-0848 (phone), 204/942-4207 (fax). ■

Find 1997 Growth in Niches

By Peter Slatin

Just as the nation experienced what economists called a rolling recession at the beginning of this decade—one that moved region by region—the four-year-old recovery is also "rolling." In the building-construction industry, however, it is progressing unevenly through market sectors as well as geographic regions.

The recovery, which began in earnest in 1992 with single-family housing, has remained elusive in construction markets that were overbuilt in the 1980's. Thus, office construction remains the slowest gainer, although it is picking up speed as growth in other markets, such as multi-family housing and retail, begins to tail off.

That slackening, however, does not mean an imminent return to recession. Instead, it signals that the growth rates for certain markets have peaked and are beginning to flatten or decline. "Housing is starting to lose momentum in response to the higher cost of financing" in recent months, says Robert Murray, vice president, construction economics, at F.W. Dodge. "But some commercial categories are picking up." (Murray prepares the charts, right and opposite, from the five-year outlook Dodge projects from its construction-project database.)

Residential goes flat

The growth in single-family housing construction has generally exceeded expectations, even as interest rates ticked up in 1996. But slower overall economic growth as well as higher interest rates are taking their toll, and a nearly 8-percent increase in multi-family construction will do little to offset flat single-family construction. That's because the number units, square footage, and cost of multi-family housing is but a fraction of single-family.

Long term, though, demographic trends [illegible] multi-family, and as recovery spreads to [illegible] cities like Los Angeles and New York [illegible] ever-costlier [illegible] should improve [illegible]

1997 National Estimates Dodge Construction Potentials October 1996

		1996 Preliminary	1997 Forecast	Percent Change 1997/96
Nonresidential Buildings				
Floor Area (in millions of sq. ft.)	Office Buildings	125	140	+12
	Stores and Shopping Centers	230	235	+2
	Other Commercial	320	339	+6
	Manufacturing Buildings	138	144	+4
	Total Commercial & Manufacturing	813	858	+6
	Educational	166	178	+7
	Hospital & Health	70	67	-4
	Other Nonresidential Buildings	166	177	+7
	Total Institutional & Other	402	422	+5
	TOTAL NONRESIDENTIAL BUILDINGS	1,215	1,280	+5
Contract Value (millions of $)	Office Buildings	$15,500	$17,975	+16
	Stores and Shopping Centers	15,550	16,250	+5
	Other Commercial	17,650	18,950	+7
	Manufacturing Buildings	11,725	12,825	+9
	Total Commercial & Manufacturing	$60,425	$66,000	+9
	Educational	$21,025	$23,125	+10
	Hospital and Health	10,025	10,000	0
	Other Nonresidential Buildings	21,675	23,100	+7
	Total Institutional & Other	$52,725	56,225	+7
	TOTAL NONRESIDENTIAL BUILDINGS	$113,150	$122,225	+8
Residential Buildings				
Dwelling Units* (thous. of units)	Single Family Houses	1,075	1,035	-4
	Multifamily Housing	265	275	+4
	Total Residential Buildings	1,340	1,310	-2
Floor Area (millions of sq. ft.)	Single Family Houses	2,141	2,052	-4
	Multifamily Housing	295	306	+4
	Total Residential Buildings	2,436	2,358	-3
Contract Value (millions of $)	Single Family Houses	$126,775	126,050	-1
	Multifamily Housing	17,475	18,825	+8
	Total Residential Buildings	$144,250	144,875	0
Nonbuilding Construction				
Contract Value (millions of $)	Transportation Construction	$42,150	$42,775	+1
	Environmental Construction	20,050	20,925	+4
	Total Public Works	$62,200	$63,700	+2
	Utilities	$2,700	$2,800	+4
	TOTAL NONBUILDING CONSTRUCTION	$64,900	$66,500	+2
All Construction				
Contract Value (millions of $)	**Total Construction**	$322,300	$333,600	+4
	Dodge Index (1987=100)	124	129	

** F.W. Dodge basis*

Don't expect growth in the huge single-family sector. But opportunity beckons for office buildings in strong markets, entertainment-oriented retail, consolidating health-care operations, and schools.

1997 Regional Estimates

Dodge Construction Potentials

October 1996

Contract Value (millions of dollars)	1996 Preliminary	1997 Forecast	Percent Change 1997/96		1996 Preliminary	1997 Forecast	Percent Change 1997/96
Northeast CT, ME, MA, NH, NJ, NY, PA, RI, VT							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$8,925	$9,450	+6	Single Family Houses	$12,025	$12,675	+5
Institutional and Other	9,225	9,625	+4	Multifamily Housing	2,250	2,625	+17
Total	$18,150	$19,075	+5	**Total**	$14,275	$15,300	+7
Nonbuilding Construction	$12,025	$12,425	+3	**TOTAL CONSTRUCTION**	$44,450	$46,800	+5
North Central IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$12,825	$14,300	+12	Single Family Houses	$27,900	$26,125	-6
Institutional and Other	11,975	12,350	+3	Multifamily Housing	3,850	3,800	-1
Total	$24,800	$26,650	+7	**Total**	$31,750	$29,925	-6
Nonbuilding Construction	$14,600	$14,550	0	**TOTAL CONSTRUCTION**	$71,150	$71,125	0
South Atlantic DE, DC, FL, GA, MD, NC, SC, VA, WV							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$11,625	$13,025	+12	Single Family Houses	$31,325	$31,400	+0
Institutional and Other	11,000	12,125	+10	Multifamily Housing	3,925	4,625	+18
Total	$22,625	$25,150	+11	**Total**	$35,250	$36,025	+2
Nonbuilding Construction	$11,775	$11,850	+1	**TOTAL CONSTRUCTION**	$69,650	$73,025	+5
South Central AL, AR, KY, LA, MS, OK, TN, TX							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$10,075	11,675	+16	Single Family Houses	$22,025	$21,075	-5
Institutional and Other	9,200	9,450	+3	Multifamily Housing	2,425	2,475	+2
Total	$19,275	$21,125	+10	**Total**	$24,500	$23,550	-4
Nonbuilding Construction	$10,950	$11,000	0	**TOTAL CONSTRUCTION**	$54,725	$55,675	+2
West AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$16,975	$17,550	+3	Single Family Houses	$33,450	$34,775	+4
Institutional and Other	11,325	12,675	+12	Multifamily Housing	5,025	5,300	+5
Total	$28,300	$30,225	+7	**Total**	$38,475	$40,075	+4
Nonbuilding Construction	$15,550	$16,675	+7	**TOTAL CONSTRUCTION**	$82,325	$86,975	+6

Prepared by the Economics Department, Construction Information Group, McGraw-Hill Information Services Company, Robert Murray, vice president, economic affairs.

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Institutional: predictable strength

The broad institutional category is relatively stable, although long-term declines could be in the offing. *School buildings* will continue to grow. *Academic buildings* and *cultural institutions* may only hold their own as pressure mounts to cut back on public capital expenditures. *Jail cells,* however, remain in demand.

Although the *health-care* industry is also in the cost-cutting spotlight, there is some construction-dollar spillover as institutions remodel to reap savings from consolidation driven by the managed-care juggernaut. Clinics, Murray notes, now account for almost twice as much square footage as hospitals in construction estimates.

New office construction now a reality

Rick Pederson, an analyst with Oncor International, a consortium of commercial real-estate firms, notes that office-building construction is slowly gaining as rents in key cities start to rise. In Boston, for example, major construction is likely to begin soon because office rents have skyrocketed in the past year to an average of $38 per sq ft from $28. That dramatic uptick, says a Boston-based market analyst, stems largely from the success of the Central Artery Tunnel project and other major infrastructure improvements.

Boston aside, says Pederson, "tightening markets are found particularly in the mountain states." Along with Denver, he cites Las Vegas and Phoenix as growth cities that will likely see new office construction. "Some cities are seeing single-digit vacancy for the first time in many years," agrees Murray.

In New York City, the nation's largest office market, construction has already begun on one major speculative skyscraper—a species that many thought was extinct—in midtown Manhattan, and there is a strong possibility that two or three more projects will begin in 1997. That is happening despite the city's flat job growth, analysts note. The low availability of large blocks of space means that corporations with strong space demand are looking beyond the existing stock.

Continued on page 116

Economy Won't Impede Growth

Slowing economic growth in 1997 might have meant slowing demand for construction. The good news? Lower interest rates will spur continued expansion.

By Phillip E. Kidd

As the economic advance zipped along at over 3 percent growth in real gross domestic product (GDP) through 1996's first three quarters, jobs increased at a 2.5 million annual pace. That has been good news for income-property investors and architects, since it boosts the demand for space to work and live.

Unfortunately, several trends will cause growth to slacken toward a 2 percent real GDP rate in 1997, cutting employment gains to a 1.8 million annual pace. Although not the best news, slower economic growth will persuade the Federal Reserve to shift from restraint toward modest ease, allowing long-term Treasury rates to dip into the 6.25- to 6.75-percent range in the summer—good news for borrowers.

Consumers are the reason growth will slow. Their expenditures are the most significant part of the economy, accounting for two-thirds of GDP. Recently the household debt-to-income ratio surpassed its 1980's peak. Meanwhile consumer delinquencies, defaults, and bankruptcies are reaching new heights. Not surprisingly, financial institutions are tightening credit standards. Overloaded with debt, consumers will trim their rate of spending in 1997 from the strong pace of recent years, placing a drag on economic growth.

Rising wages are no inflation threat

With unemployment hovering around a low 5 percent, businesses are reluctantly raising wages to attract workers, especially those with technical skills. Improved earnings will largely be funneled to pay debt down, rather than adding to expenditures. Consumers won't contribute much to growth again until 1998.

The financial markets and the Federal Reserve act as if the spread of higher wages will ignite inflation in the next 12 months. [illegible] threat. Domestic businesses face [illegible] competition from foreign [illegible] higher labor [illegible] to raise [illegible] which will [illegible]

Nor is the economic advance at risk because unemployment is too low. There are 7.3 million unemployed, 4.2 million part timers, and millions of underemployed workers looking for good jobs. The real peril is the lack of skilled labor. That is why wages are rising in such industries as aerospace, communications, technology, and healthcare. However, not all the skilled people are where the jobs are. Consequently, labor market rigidities will cut job growth to a 150,000 monthly average from its current 210,000 average.

Soon any fear of worker shortages will disappear. Twenty years ago, the number of births began a rise that surpassed 4 million in 1989 and remained near that level during the 1990s. These young people are now beginning to enter the job market.

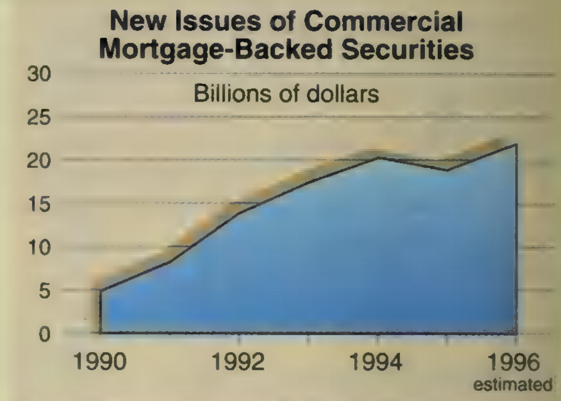
Significantly, many have grown up with computers and the internet. Businesses will find them much more adaptable to the technology required to produce and sell goods and services in today's global economy. They should add to worker productivity, weakening one of the constraints on faster real GDP growth.

Commercial overbuilding? Again?

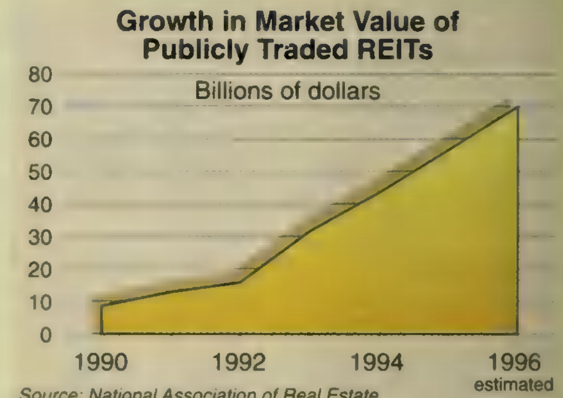
Even with strong employment growth, real-estate professionals worry that another round of overbuilding in the commercial, industrial, and multi-family markets is in the making.

Analysts are concerned because cash-rich lenders continue to pour funds into real-estate investment. What should brake overbuilding is that experienced investors are becoming more selective about funding projects. Significantly, the emergence of real-estate-investment trusts (REITs) and commercial mortgage-backed securities (CMBs) as important sources of real-estate financing is bringing more objective investment criteria into these markets.

REITs and CMBs hold securities that back properties. They require developers and owners to provide current, reliable, monthly figures on income and expenses for each property held. Second, many REITs and CMBs contain only a single type of property, i.e., hotel or office. Consequently, sustained changes in the valuations of such securities highlight swings in sentiment to or away from a particular property type.



Source: Commercial Mortgage Alert And Lehman Brothers



Source: National Association of Real Estate Investment Trusts and Phillip E. Kidd Consulting

The growing influence of real-estate-investment trusts (REITs) and mortgage-backed securities (CMBs) means that stricter underwriting requirements for commercial development are being put in place.

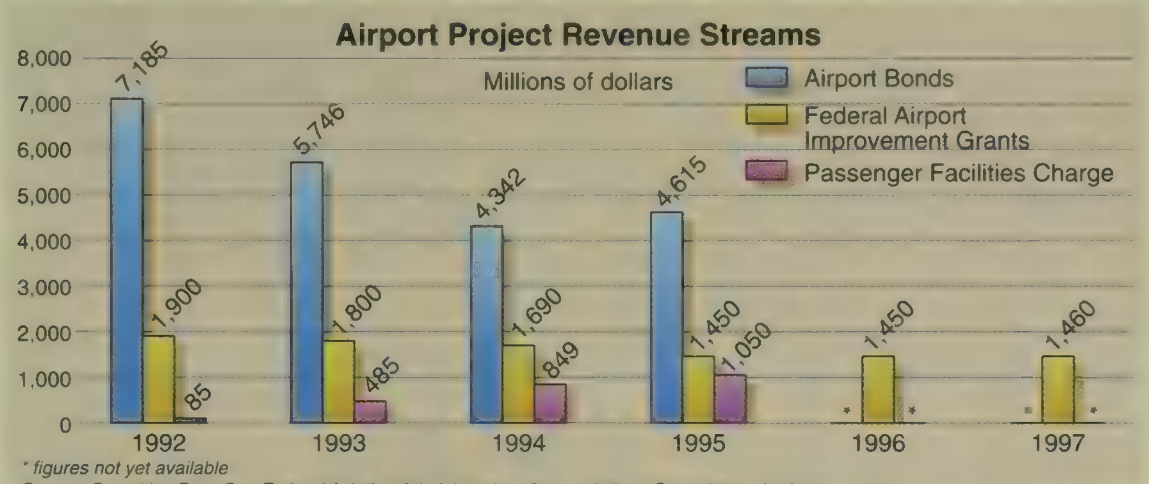
In other words, investors now have the information to be more knowledgeable in deploying funds primarily for high-return properties in rapidly expanding local markets. Appropriate use of this information should minimize the tendency to overbuild, at least in the next 12 to 24 months.

Growth ahead

Disciplined deployment of funds for commercial, industrial, and multi-family investment buildings in the near term will position the industry for a surge of activity in another two years. Excess space will be absorbed, and baby boomers' children will need housing—mostly multi-family—and they will need places to work and buy goods and services. ■

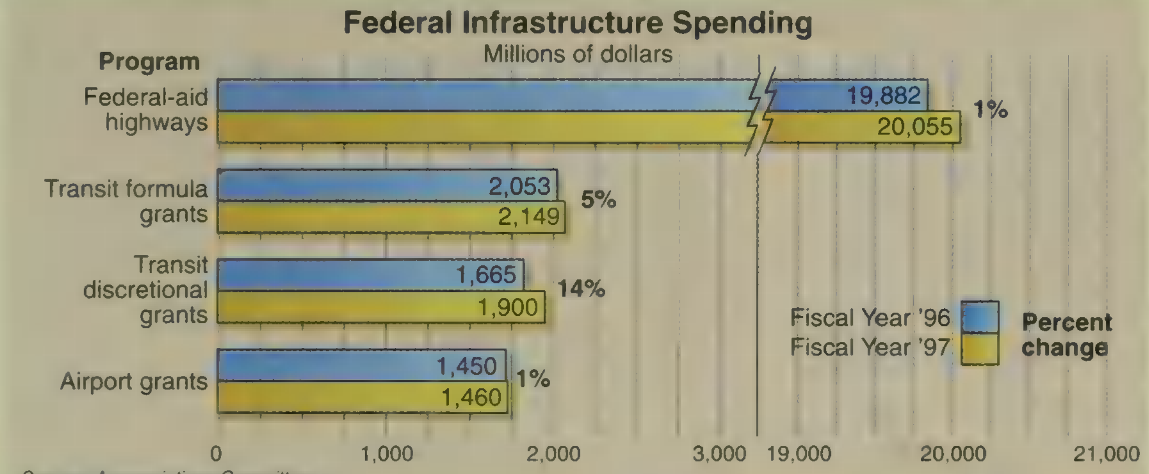
Upward Momentum For Infrastructure

Federal support for highways, transit, and airports is up. But uncertainties at the local level, and a pending attack on architect-designed highway "enhancements," cloud the outlook.



* figures not yet available

Source: Securities Data Co., Federal Aviation Administration, Appropriations Committees, budget requests



Source: Appropriations Committees

Charts by Leanor Glynn

Though federal grants and airport passenger charges are rising, they're not making up for declining airport bonds as a source of financing (top chart). Airlines have been reluctant to contribute to facilities growth, which has caused projects to be deferred. On the other hand, most federal transportation categories are seeing growth (above).

Paced by strong federal funding, transportation markets look promising for 1997. That's good news for architects, particularly those aiming at airport and rail projects.

Despite stiff budgetary pressure, the trends for fiscal year 1997, which began Oct. 1, 1996, are upward. President Clinton signed a budget bill that increases the federal-aid highway program, transit formula and discretionary grants (which help finance new rail lines and bus facilities as well as upgrades to existing subways), and airport grants (table right). Local matching money adds to highway- and transit-construction figures.

Transit spending is bolstered by a provision in the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), which allows local authorities to shift some road money to transit. Since ISTEA was enacted, some $3.8 billion in highway funds has been transferred. Much of that has gone to buy buses, but some has been used for facilities work.

"ISTEA monies tend to [help] build a *place*—not just a rail line," says Greg Baldwin, partner with Zimmer Gunsul Frasca, Portland, Ore. "What it tends to do is make those transit projects real catalysts in community development." Among ZGF's transit projects are several in its home city, including a planned $40-million streetcar line. Baldwin also sees "a tremendous amount of initiative at the local level seeking alternatives to federal funding."

"Enhancements" under fire

Architects have benefited from a small ISTEA set-aside that created the "transportation enhancements" program. Through fiscal 1996, states had obligated $1.3 billion for that effort, according to the General Accounting Office. The largest share has gone for bikeways and pedestrian paths. But 17 percent has been devoted to historic transportation facilities, such as the $3-million restoration of an 85-year-old train station in Greensburg, Pa., assisted by $1.4 million in enhancements funds. ISTEA is up for reauthorization in 1997. Its flexibility to shift funding to transit will likely remain. But enhancements, even though they are only 2 percent of ISTEA obligations, face a threat from highway interests, which want to see them abolished, or at least have funding capped and project-approval criteria more limited.

Defenders, which include the AIA, will lobby to retain the program. The Greensburg station project, on the National Register of Historic Places but vacant for more than a decade, typifies the validity of the program, according to William R. Hughes, secretary-treasurer of project architect, RWL Architects/Planners Inc., Greensburg. It will give a lift to downtown Greensburg, "which needs every single assist that it can get to mitigate the loss of business to the periphery and the building of malls."

Critics see enhancements as pork. Advocates say states have been slow to move. Part of Pennsylvania's allocation of enhancements was approved for Greensburg in 1993. But William A. Roach, president of RWL, says it took 18 months to get the money moved to the local level. Ed Myslewicz, deputy press secretary of PennDOT, says that Greensburg was a "pilot project" with "many intricacies," and such transfers should now go more smoothly.

Stuart Binstock, AIA vice president for federal affairs, sees bi-partisan support for

Continued on page 127

Tom Ichniowski is Washington, D. C. bureau chief of Engineering News-Record.

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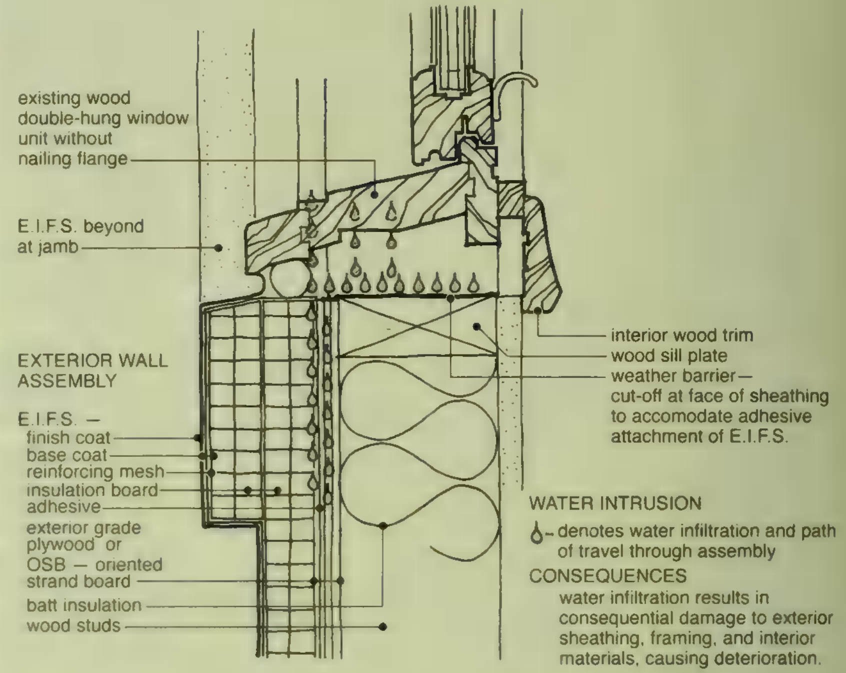
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WATER INTRUSION
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CONSEQUENCES
water infiltration results in consequential damage to exterior sheathing, framing, and interior materials, causing deterioration.

By Elena Marcheso Moreno

EIFS—exterior insulation and finish system—is an appealing, low-cost, stucco-like cladding that has proliferated in the marketplace. As use of EIFS expanded from small-scale commercial buildings to both larger projects and multiple residential applications, designers and manufacturers have begun to look beyond standard strategies for detailing and installation.

Part of the system's desirability lies in its unique combination of highly efficient thermal insulation and the wide possibilities it offers in colors, finish texture, and detail. Since many installations have suffered from water-penetration problems, however, architects, builders, and owners are concerned about the reliability of the American concept of EIFS [description opposite]. It relies on a face-sealed membrane to keep water out, and, critics say, fails too often at edges, penetrations, and for lack of backup drainage.

What can go wrong?

EIFS can fail in two ways. Water can enter exterior walls through gaps around windows, [illegible] penetrations, at joints, and around [illegible] is made [illegible] in the wall, even though the EIFS finish itself generally remains intact. Trapped water leaks into the interior and rots sheathing and wall components.

[illegible]

Investigations have shown that gaps in the barrier occur because of improper detailing, poor execution, and poor maintenance. Improperly designed and executed roof and sidewall flashings are particularly vulnerable. Moisture can also collect at lower window corner joints or mulled connections.

Kent Stumpe of Synergy, who serves as the EIFS Industry Manufacturers Association (EIMA) marketing committee chairman, says that when standard EIFS is detailed and applied according to the manufacturer's directions the water stays out. A number of manufacturers, architects, and building envelope consultants agree with him, while others question whether such directions are fully adequate or require too-high a level of application expertise, especially in residential construction.

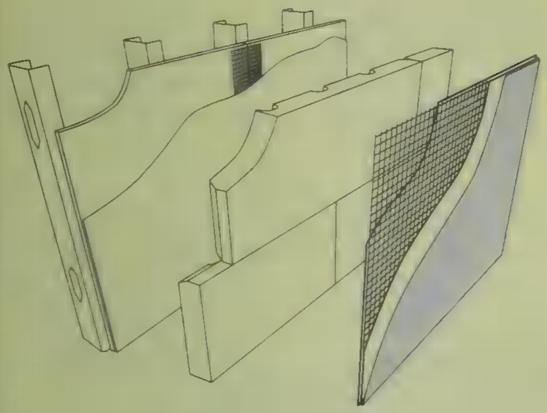
Gary Zwayer, senior consultant with Wiss, Janney, Elstner Associates, Northbrook, Ill., (an architectural, engineering and materials-science firm that has done many wall investigations) agrees with Stumpe that many moisture problems with EIFS occur because manufacturers' instructions aren't followed. Failure to leave proper space for the sealant joint is a common problem. Either joint configurations do not allow for proper installation of the sealant or don't allow the sealant to perform as intended during movement. This happens most often at windows, says Zwayer. Also, panel edges are often not back-wrapped correctly and spaces are left between insulation-board edges. While some designers want to use expansion joints where they don't need them, Zwayer often finds these joints missing where they are necessary—at changes in the substrate.

Articulated grooves for ornamentation are popular design strategies, but they have a propensity to crack, says Mark Williams, of Williams Building Diagnostics, Maple Glen, Pa. Grooves thin the EIFS coating, which may crack, says Williams. If designers want to use such details, they and installers must assure suitable thickness. In addition, says Williams, other ornamental features should be mounted atop the base coat to provide continuity of the lamina, rather than wrapping the coat over the decoration.

Steve Ruggeiro, principal of building technology with the investigative-engineering firm Simpson, Gumpertz & Heger, Arlington, Mass., says the barrier concept itself is "conceptually flawed," and is in fact more prone to water penetration and leakage damage than widely believed. "Sealant joints and wall

Continued on page 44

Low-cost and versatile, EIFS have great appeal as an exterior cladding. But successful building envelopes demand that manufacturers, designers, and installers work together.



Photo, opposite left, shows the level of intricate decorative detail possible with an EIFS PB product, though designers should be aware of too thin coatings at fine articulations. The window-sill detail (opposite, right) demonstrates how water can infiltrate behind even correctly installed standard sealed and flashed EIFS, wetting the sill plate and the sheathing behind the insulation board. Mark Williams suggests that a remedial PB EIFS detail should include metal sill-pan flashing (with end dams) under the window sill and on top of the wood sill plate. This should extend at least 1 1/2 in. past the edge of the sheathing board. Illustration by E. Keith Stellabott

Axiometric (above) illustrates the elements incorporated in Dryvit Systems' moisture-drainage EIFS. The substrate is a fiberglass-faced gypsum board, coated with a moisture-proof membrane. Channels routed directly into the insulation board are designed to capture, control, and direct any incidental moisture to weeps. Reinforcing mesh embedded in a flexible base coat is said to resist impact; the decorative and weatherproof acrylic finish coating is the outer-most cladding component.

EIFS—The American System

Exterior insulation and finish systems (EIFS) were introduced to America from Europe, where they have been used extensively since the end of World War II. EIFS is a versatile, low-cost building envelope finish that offers designers a range of appearance options. By the 1970's they had gained popularity for commercial projects. By the mid-1980's EIFS also began appearing regularly on residential projects.

American EIFS shares with European EIFS a reinforced two-coat finish over insulation board. The chief difference is that EIFS in Europe is attached to masonry or concrete. In America, it is most commonly attached to sheathing over wood or metal studs.

Five components

Insulation board is used to reduce heat flow through the wall and act as an interface between the wall and the exterior finish coat. Adhesives or mechanical fasteners attach the insulation board to a substrate, which can be masonry, plywood, gypsum board, and almost any existing wall surface. Most EIFS adhesives are water-based and contain some type of polymer (a plastic resin). A base coat applied to the outer surface of the insulation board provides structural stability to the finish and serves as a primary weather barrier. The base coat must be thick enough to hold reinforcing mesh, but not too thick to be supported by the insulation board. The glass-fiber mesh embedded in the base coat provides strength and impact resistance to the system. On top of this goes a thin protective finish coat made with an acrylic resin. This is the visible surface where color and texture are incorporated.

Two EIFS types for different purposes

The *Class PM* system (polymer modified) has a base coat of 1/4-in. to 3/8-in. thickness. It is applied to a heavy reinforcing mesh that is attached to an extruded-polystyrene insulation. Class PM EIFS, known as hard-coat, offers the greatest impact resistance, and with its high cement content, has properties similar to stucco.

The more commonly used *Class PB*, referred to as soft-coat, uses expanded polystyrene insulation board and has a minimum base-coat thickness of 1/16-in. Reinforcing mesh is embedded into this polymer-based material during installation. While it has less impact resistance, it is flexible and less prone to cracking. This system is the best choice for complicated building shapes and ornamental details. EIFS can also be plant fabricated into panels.

Design considerations

"Think carefully when selecting colors for EIFS," says Carlos Buendia, an engineer and owner of Prime Coatings, Springfield, Va. Mold is likely to grow on any building products in heavy shade. A white house in the woods with a large north elevation is not going to stay white, he says. Instead select a darker color. And in his experience, certain colors deteriorate rapidly under ultra-violet light. "The dark yellows, reds, and browns can change a lot," he says.

"We are called in to repair many EIFS projects," says Buendia. "There really isn't anything wrong with EIFS; it is almost always a problem with details or installation. Architects should talk to the manufacturer before they design EIFS details. All the reputable manufacturers are willing to work with their customers." Details should show wall sections of all typical conditions, penetrations, and material transitions. "One of the most common problems we have on jobs is with mixed-up specifications," says Buendia. "A number of architects are used to working with stucco, or the more stucco-like older generation of EIFS. They want to use expansion joints or items that we don't use for Class PB EIFS, things like metal lath or metal accessories." Basically, he says, they get confused between the Class PB and Class PM systems. "Almost always they need the PB system because they have designed special shapes and molds, but they specify the thicker PM because they are concerned about impact resistance. They can't get both."
E. M. M.

penetrations are problematic due to a lack of backup drainage in the system, and a lack of through-wall flashings," he says. "Building owners take on significant risks when using it in places with frequent rains."

Upgraded EIFS

Williams, whose firm specializes in building-envelope investigations, spends a good portion of his time working on EIFS-clad projects, both new designs and remediation. He disagrees with Ruggeiro's condemnation of the barrier concept. "Whether commercial or residential buildings, where EIFS claddings are continuous, they generally perform well. The issue is at terminations, where the EIFS starts and stops," he says. He believes the reason for water penetration at these points is that manufacturers' details are not explicit enough and do not anticipate water intrusion from other building components and through-wall penetrations (detail, page 42)

Because EIFS has experienced numerous failures, especially in rainy and marine climates, architects and the industry are devising systems that have more room for error and are less sensitive to imperfect installations. Among ways to upgrade EIFS are:

- *Back-up barrier:* The architect may add a moisture-proof barrier over the sheathing to keep water that may have leaked from entering the wall.
- *Flashings and weep holes:* Manufacturers' details often don't take into account the removal of water that penetrates the face-sealed barrier. It is the architect's responsibility to detail flashings and weep holes that can carry out any trapped water. These, combined with a moisture barrier, are called a "drainage plane" solution.
- *Rainscreen system:* Some manufacturers are now offering systems that create a cavity behind the insulation board to drain water away. To work, it needs suitable weep holes and flashings.

There is no consensus yet on how such techniques should be deployed. North Carolina building officials [illegible] that drainage pathways [illegible] for EIFS installed in the [illegible] working [illegible]

numerous failures on houses spurred calls for remedial systems. At least one EIFS manufacturer has backed out of the barrier concept. US Gypsum, with the help of an independent testing laboratory, conducted a test of 30 houses in New Hanover County, N.C., that incorporated its traditional EIFS and determined that the systems failed because of design and construction errors.

Yet, the company found that the houses were built with the same level of care that could be expected for residential construction anywhere in the country. US Gypsum concluded it was unreasonable to expect the quality of standard installations to improve enough to guarantee reliability, so now the company markets what it calls "insulated stucco-look water-management finish systems" that incorporate flashing and weep details and a drainage plane.

"The barrier concept addresses EIFS as a sealed system and manufacturers pretty much deal with it from the outer face without enough consideration of the cross section," Williams says. He doesn't think drainage-plane EIFS is necessary behind all surface areas. "We have found that provisions for drainage are not needed everywhere, only at points where the continuity of the barrier is interrupted. At these terminations, discrete water collection and removal should be provided."

Upgraded details and sheathings

Few EIFS details have been developed specifically for standard residential construction, Williams says, so architects should take special care where EIFS meets other components. He points to self-flashing windows, which work well when installed in siding and masonry. However, the self-flashing attachment flange in residential windows is poorly placed for EIFS. In residential construction, the window rough openings are wrapped with materials like building paper. "Because EIFS adhesives don't stick to these surfaces, framing protection is not integrated," Williams points out. "Rough framing needs to be protected from incidental moisture." Also, "Some [EIFS makers' details] call for waterproof windows, which don't really exist."

Most common sheathings for EIFS include plywood, oriented-strand board (OSB) sheathing, and gypsum board. Plywood and OSB are used most frequently for residential construction. Moisture-caused expansion of the sheathing can damage EIFS bonds and crack the finish.

Gypsum board is typically used in commercial buildings to help meet wall-assembly fire ratings. Adhesives usually fasten the insulation board to the sheathing, but paper-faced gypsum sheathing can delaminate in the presence of water, experts say. The U.S. Department of Housing and Urban Development and the U.S. Army Corps of Engineers have banned gypsum-based sheathing on their EIFS projects, depending instead on cement board or calcium-silicate board. Some manufacturers now require the use of fiberglass-faced gypsum sheathing.

Detail for high winds

For substrates such as masonry, concrete, and plywood, plastic and metal mechanical fasteners are used to attach EIFS. However, the attachment is not continuous as it is with adhesives, and it offers lower wind resistance. Williams suggests both adhesives and mechanical fasteners are needed in some applications.

Wind loads can cause wall deflection. When dealing with high-rise EIFS applications, Williams says it is critical to calculate wind-load pressures accurately or wind loads could cause EIFS to detach on higher levels, if fastening is not sufficient to keep fluttering insulation from breaking adhesive bonds or pulling out fasteners.

Metal-stud walls are particularly vulnerable in marine climates and merit careful attention to leakage, if used. "I have looked at too many problem metal-stud projects," says Zwayer. "It's not the EIFS per se, but any building assembly that flexes." Consequent leaking is exacerbated because movement scrapes protective galvanizing off the studs. "Salt air accelerates corrosion. Leaking buildings in coastal areas corrode more than buildings in other places." Zwayer says that metal studs are never used with EIFS in Europe. If a metal-stud system is to be used in these conditions, the architect should be sure it is suitably protected from moisture penetration. ■

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Remaking Bucharest: Are Ideas Enough?

An ideas competition that could propel the urban plan of Bucharest into the 21st century.

By Barry Bergdoll

"Can an international ideas competition rehabilitate at once a heavily-scarred urban center and a shell-shocked architectural profession?" That's the question posed by the "Bucharest 2000" competition, judged in early September. At the heart of the controversy is the gargantuan "House of the People" and the nearly one-mile-long Boulevard of the Victory of Socialism constructed by Nicolae Ceausecu, perhaps the last 20th-century European dictator to use monumental Classical architecture and urbanism to glorify his regime. Ceausecu diverted a terrifying percentage of Romania's annual budget in the 1980's to these projects. Their construction involved the demolition of 1,200 acres of the historic core, dating from the 17th to 19th centuries, and a daunting ensemble of late Byzantine and Neoclassical churches and monasteries, only two of which—haphazardly reerected behind the new boulevard's facades—were saved.

A stage set left empty

This stage set was never to serve, for the uprisings of December 1989 and the televised trial and execution of Ceausecu and his wife took place against the backdrop of the older public squares of the city. Days later a stunned local public and probing television cameras entered the unfinished marble halls and wood inlaid chambers of this so-called House of the People for the first time. The "House" had by then employed most of Bucharest's architects, although few could examine plans of more than a portion of the building, which took shape as much through Ceausecu's evolving fancy as it did through the designs of his young architect Anca Petrescu.

This concrete white elephant with its vast surrounding void has been a political and architectural quandary since Ceausecu's fall. Construction cranes rust on the incomplete exterior, while inside workers busily hang chandeliers and unroll carpets, even though no one has proposed a program to fill the vast building (exceeded only by the Pentagon in floor area) and everyone is nervous over the symbolism of succession here. Romanian architects are all but unanimous in their disdain, but significant segments of the population harbor a sense of pride in its workmanship, not the least the members of the newly-formed Chamber of Deputies, who, earlier this fall, took up residence in one of its wings.

Barry Bergdoll teaches modern architectural history at Columbia University and was a member of the Bucharest 2000 competition jury.

"Bucharest 2000," announced in late 1995, was the most ambitious of a series of efforts of the Union of Romanian Architects to reinvent a place for architects in the decision-making process about the future of Europe's ninth largest city. In 1990 the Union circulated an exhibition of photographs, many taken clandestinely, of the 1980's destruction. They then turned to studying Bucharest's astonishing International Style residential and commercial buildings, which line the 19th-century boulevards grafted onto the haphazard and low-scale traditional Balkan urban fabric of the city, where they see viable starting points for remaking the center.

An ideas competition takes off

As early as 1992 the idea of a competition was discussed to take advantage of the slowly melting freeze-frame situation in Bucharest, where both architectural and economic voids created by Communist rule have yet to give rise to large-scale land speculation.Western investment has been sluggish compared to other former Communist capitals, hindered by doubts of the reality of political change and by the state's reluctance to resolve issues of land ownership. "Bucharest 2000" took place in a charged atmosphere since, for the first time the city and the press have been polarized over a series of speculative projects, most notably New York City-based architect (and Romanian exile) Vladimir Arsene's project for a tower addition to one of the historic center's hotels.

This transitional moment was reflected in the competition's open-ended brief. Little was specified beyond rough percentage of uses—governmental, commercial, residential, and public space—in the zone to be studied and no specific buildings were required. The ground rules were only that no major demolition of either "House" or boulevard would be considered realistic; that contestants were to restore a lost urban coherence and provide for Bucharest's emergence on the European economic and political stage; and that the restoration of the famed 17th-century Mihai Voda monastery to its original location was favored.

The almost one-mile long Boulevard of Victory, the heart of Nicolae Ceausecu's vision of Bucharest (top).

© Barry Bergdoll photos

The boulevard's centerpiece, the "House of the People," designed by Ceausecu's architect Anca Petrescu.

A flood of responses

The 235 solutions ranged from projects aimed at reconstructing the center with the imagery and strategies of low-scale neo-traditional urbanism associated with Leon Krier and the Prince of Wales to projects for office towers either scattered or grouped into a composition around the "House." A small group of competitors seized the invitation to design manifestoes either on the nature of the post-industrial city or, in the case of several contributions from exiled or disenfranchised Romanian architects, to vent their anger and frustration, but none of these approaches found sympathy with Romanian jurors, who were eager for realistic solutions.

Such a solution might have a chance of fulfilling the competition's promise of a consultancy position for the winner.

International jury, international prize-winners

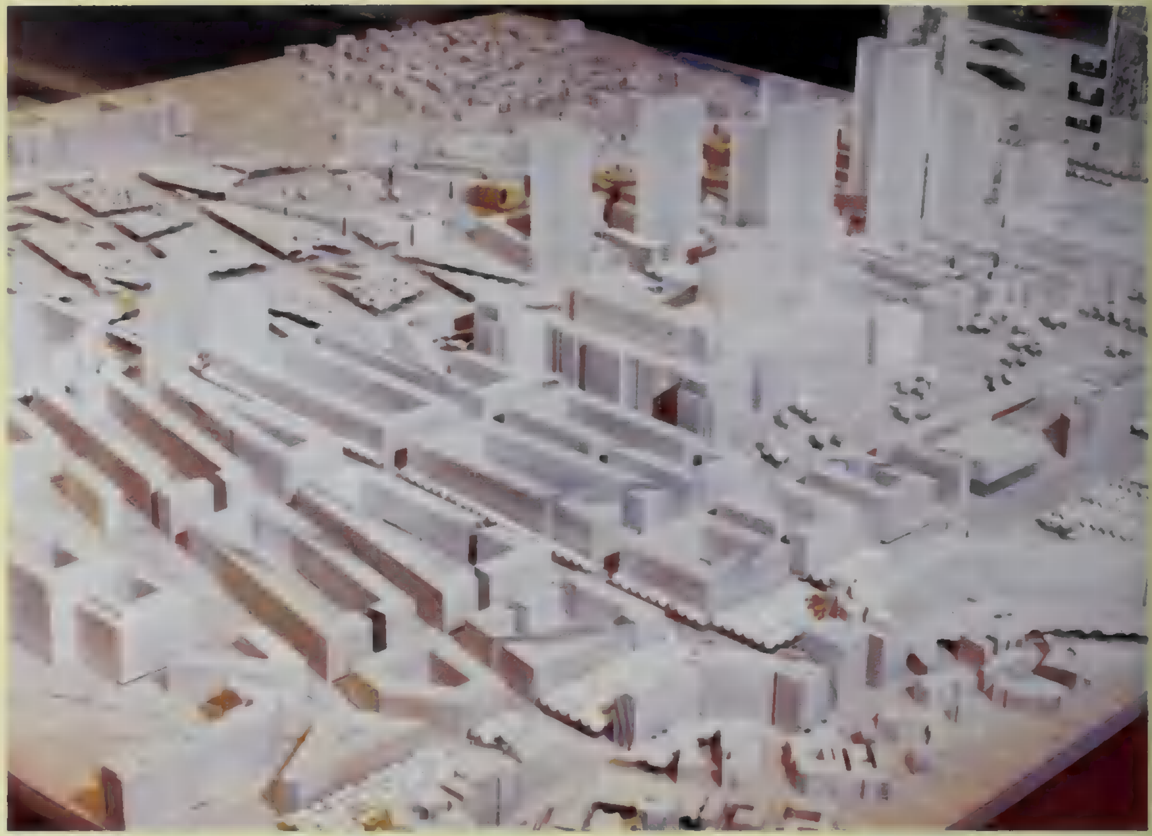
In April, an international jury selected 15 projects for further study to be judged over the Labor Day weekend when five prizes and five honorable mentions were awarded. The 13 member jury included Kenneth Frampton (elected president of the jury), Dan Hanganu, Fumihiko Maki, Josep Martorell, Vittorio Gregotti, Claude Vasconi, Polish architect Krzyztof Chwalibog, and myself, Barry Bergdoll, as well as five Romanian members, including Alexandru Beldiman, organizer and driving force behind the competition, the City Architect and the Minister of Public Works.

First prize of $100,000 was awarded to Meinhard von Gerkan of Hamburg, Germany; second prize to Franz and Marina Echeriu of Innsbruck, Austria; third to Adam Drisan and James Saywell of Florence, Italy; and equal fourth prizes to Domenico and Federico Fiorani of Pistoia, Italy and Pierre Sicard and Paul August Gilliot of Tarbes, France. The only American among the finalists was Amy Anderson of New York, awarded one mention, the other four going to Romanian teams either in Bucharest or in exile in Paris. Richard Roger's fantastical project for a series of high-tech towers of diverse forms ringing the House of the People was among the finalists but not premiated.

Jury support for von Gerkan

Von Gerkan's scheme found rapid support among the jurors, who admired its juxtaposition of a flexible urban network of perimeter blocks of various dimensions with a corridor of high-rise office development, an approach adapted from his 1993 scheme for the redevelopment of the rail yards in the center of Stuttgart. His plan rationalizes the street network, creating a series of north-south con- [illegible] whose isolation from [illegible] in the voids [illegible] east west axis.

[illegible]



First prize of $100,000 went to the scheme of the team led by Meinhard von Gerkan of Hamburg, Germany for the above scheme.

be pierced by pedestrian paths weaving through on the lines of streets erased by Ceausecu's bulldozers. The urban grid interweaves a series of large scale green spaces and is played off subtly against a newly articulated course of the Dambovita River on the northern edge of the site. The commercial corridor forms a wide diagonal (roughly north-south) cut behind the House of the People, which nearly sideswipes one pavilion of the building and thus serves at once to destabilize the "House's" insistent axiality, to integrate it in dense urban fabric, and to offer significant competition to its dominant silhouette.

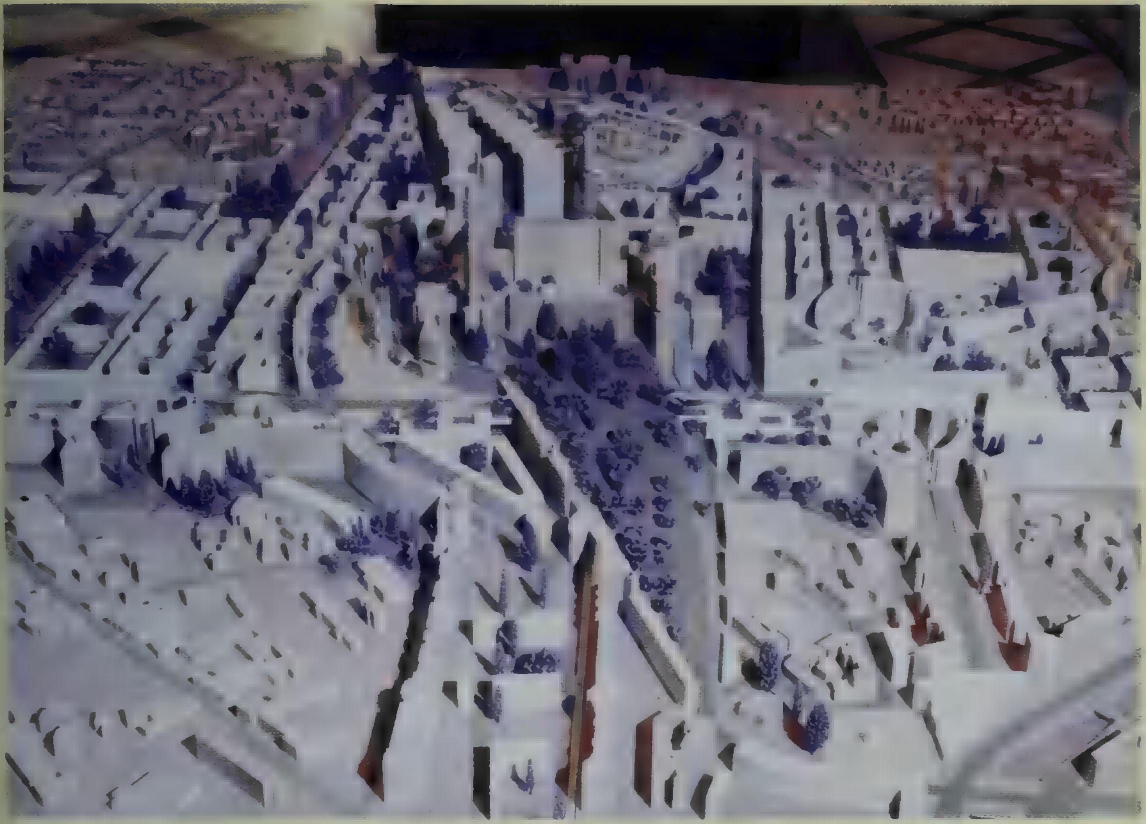
The jury admired the realism of this approach: while containing the towers in one part of the city, rather than allowing their haphazard proliferation in this low scale Balkan metropolis, the plan does not propose a high formal composition likely to be compromised by development lags or by individual architect/developer's projects.

A debate over Bucharest's future

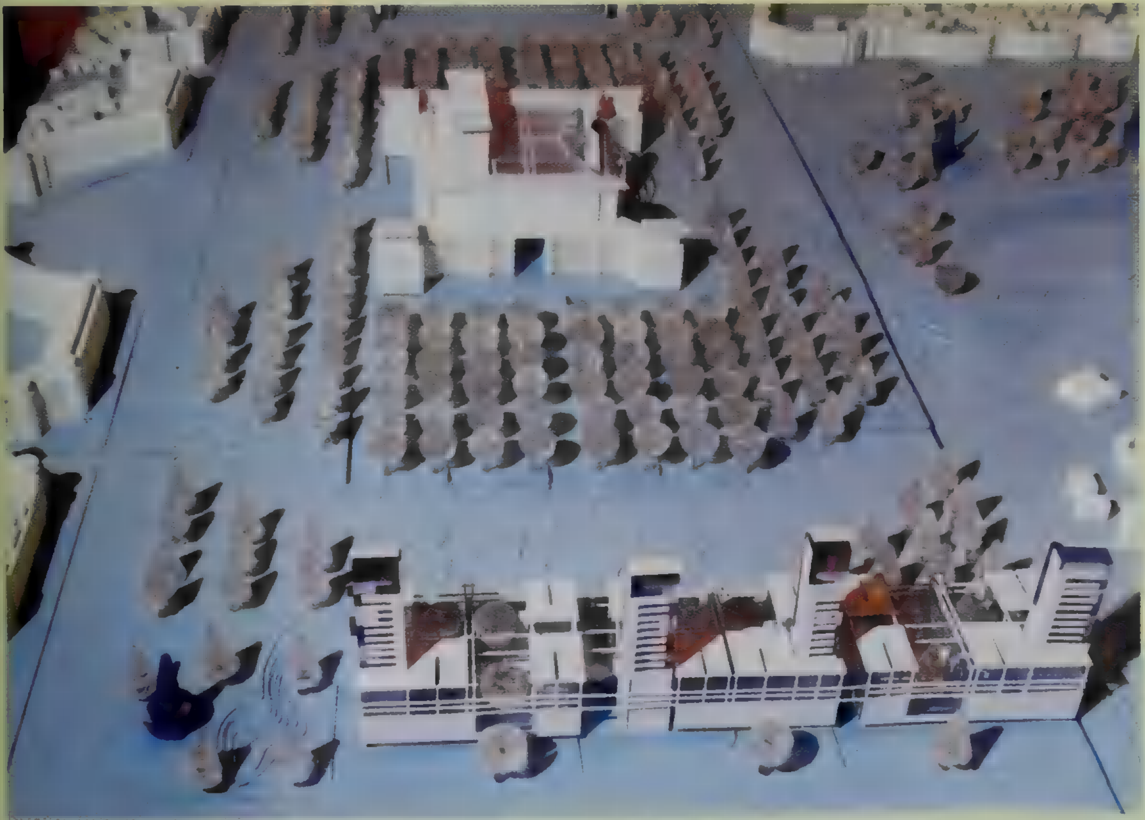
The unanimous enthusiasm for von Gerkan's scheme was remarkable since all the other schemes occasioned a lively debate over Bucharest's future and quickly underscored not only the usual personal differences among jurors but also substantially different attitudes between architects from the former Communist countries and the jurors from non-Communist nations. Those only recently freed from the strictures of professional practice in Communist countries, and those witness to Ceausecu's operation were especially eager that the solution be not merely a reasonable path for the future, but , in addition, that it exercise some retribution for the past.

Rules open to interpretation

Although the rules of the competition implied an acceptance that the recent past could not be denied in an effort to recuperate an older one, most Eastern European jurors were enthusiastic about proposals that cut or blocked the great axis of Ceausecu's boulevard in some way. Ironically, "Western" jurors were more leery of free-market high-rise development than their Romanian counterparts, who are eager to see business



The entry by Richard Rogers Partnership was a finalist in the competition, but did not receive an award.



The scheme by Amy Anderson, of New York City, received honorable mention. It was the only American project among the finalists.

investment in this quarter even while they are suspicious of using the guiding hand of strong zoning or government incentives to attract it here from the periphery of the city where all signs indicate that an edge city might develop while Bucharest awaits the reconstruction of its heart.

The enthusiasm of some foreign jurors for landscape and ecological approaches as suitable responses for a post-industrial city, where the river, monuments, and pedestrian leisure might find their place alongside the concerns of modernizing the traffic network, met with a local sentiment that the city needed to "catch-up" rather than surpass Western European capitals.

In addition, the jurors viewed such radical projects as Amy Anderson's landscape design, with minimal built intervention, as intriguing architecture but dangerous politics, fearful still that the Romanian state, where the old Communist class retains considerable power under new names, might find here an excuse simply to maintain the voids of the palace and negate the goals of the competition both in specific design terms and in a much hoped-for role for architects in an open, on-going debate about the city's future form.

Excitement was palpably high in the local architectural community as the projects were put on exhibit in a cavernous hall of the "House." Still, the Romanian presidential elections later this month and the as yet unannounced program of a recently appointed City Architect will reveal if von Gerkan's plan will be married with a powerful administrative agency for future study and implementation, or if it will merely be the subtlest and one of the most realistic models of urbanism in the book the competition organizers have promised for next year. ■

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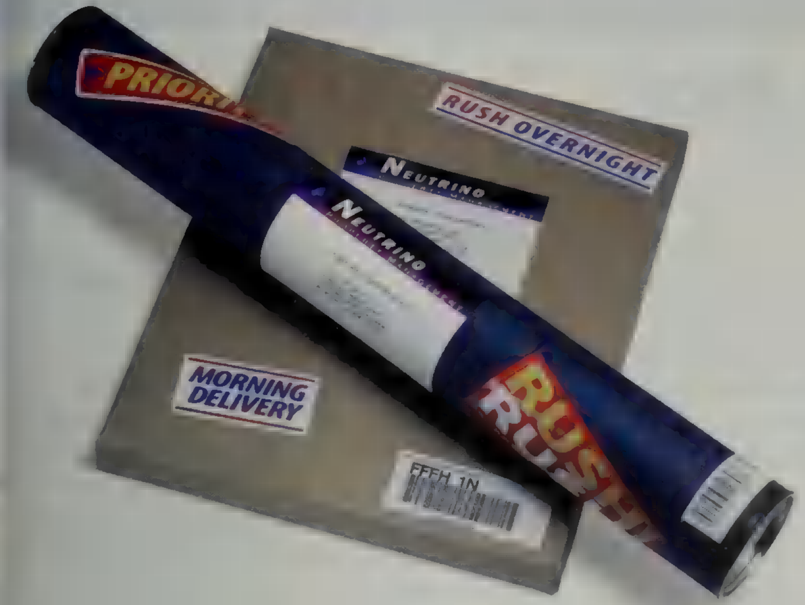

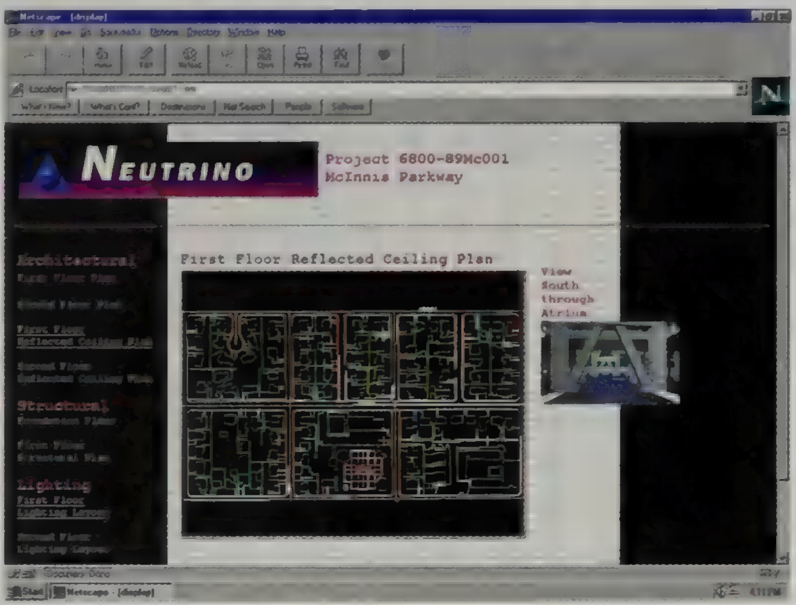

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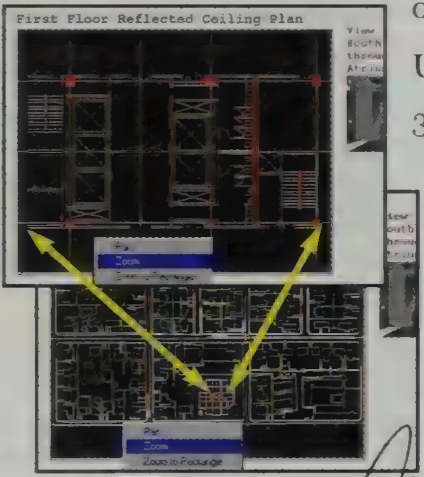

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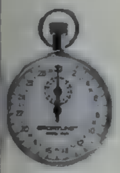

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Is There a Quiet Place in the Alternative Office?

By Dana Holbrook

The hushed, paneled confines of old-line Wall Street firms are nowhere in evidence at BEA Associates, a financial-management firm located in the Citicorp Center in New York City. Instead, there's a constant burble of activity in the open bullpen that holds 60 trading stations and support staff. Traders sit just 12 ft apart, phones glued to their ears. Time to remodel? No, the space has been renovated this way, by New York City-based Phillips Janson Group Architects, because BEA sees this acoustically calibrated commotion as energizing, not deafening.

Noise is a stimulant that, in the right amount, spurs productivity. But surveys show noise contributes more to workplace distractions than poor lighting or air quality. And offices are becoming noisier—often unintentionally—as printers, speakerphones, and sound-emitting Web pages become more prevalent. Also, more work is today done in teams, and more interaction is expected. But when boisterous teams are placed next to individuals needing either speech privacy or intense concentration, conflicts arise that are not always solvable by traditional means.

Dana Holbrook is a writer in Westport, Conn., who specializes in technical and construction issues.

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Open office distractions

In the 1970's, when open-office plans first caught on, walls came down and cubicles were spread in vast office "landscapes." Throwing everyone into one giant, open pot, it was believed, would eliminate the boundaries imposed by private offices, improve communication, and foster creativity. The pioneering open-office plans had generous space standards and irregular layouts to offer lots of casual opportunities to meet. But today, cost-driven companies have tightened the standards, lining cubicles up like railroad cars, often 10 ft apart or less. Workers became unwitting eavesdroppers, barraged with conversations from all sides. (An average office conversation is audible within 50 ft of the talker.) Managers increasingly found themselves fielding complaints about too little privacy and too many distractions.

It is specifically the human voice that halts workers mid-thought and prevents them from concentrating. "It's practically impossible to tune out another person's voice. We can't help but listen," says Dennis Milsom, a principal at Shen Milsom Wilkie, acoustical engineers based in New York City.

Acoustics for the "alternative" office

Now that the team spaces and non-hierarchical arrangements of the so-called "alternative office" are driving designers to pull down walls again, the acoustical qualities of these new kinds of spaces must be tailored to their occupants. "After our early enthusiasm for cavernous spaces, we realized that boundaries can be established in a variety of ways," says Garth Rockcastle, a principal at Meyer, Scherer & Rockcastle, a Minneapolis architectural firm that has been at the vanguard of new-office trends. "There is no one right way to configure office landscapes."

The firm is completing a project that defines the new challenges designers face. SEI Corp. provides financial services to banks and high-net-worth individuals. Because employees work in very fluid teams, private offices would have impeded the high-speed interaction needed, and even conventional systems furniture was not flexible enough.

Instead, Meyer, Scherer & Rockcastle designed a long, narrow building that resembles nothing so much as the old mills that once dotted the countryside of its suburban Philadelphia location. The 180,000-sq-ft interior is completely open except for conference areas and meeting rooms. Desks and filing

David Sabalvaro, a principal at Studios Architecture in San Francisco, suspended acoustic clouds—faceted, geometric shapes made of metal studs and acoustical batt insulation wrapped in wire mesh—over groups of workstations in an 80,000-sq-ft warehouse converted to open offices for Silicon Graphics. The "clouds" not only delineate the space, they mitigate the clatter without installing a ceiling over the entire area. A lab at Charles Salter Associates simulates for clients the sound qualities of various assemblies, shown on computer screens, opposite.

Higher noise levels may be desirable in today's more collaborative office environments. Whether or not this is the case, acousticians and architects more often find themselves negotiating acoustics to match office work styles.

cabinets are on wheels; staff simply roll them into whatever arrangement is needed at any given time. Computer and electrical hookups descend like coiled umbilical cords from a power and data grid in the ceiling. There are no cubicles; freestanding folding partitions are available for employees who need temporary privacy. "The company wanted to eliminate status distinctions among the 700 employees and create a setup that was flexible. We had to reflect that egalitarian attitude in the architecture of the space," says project manager John Cook.

How all that open space will work acoustically is "a good question," Cook says. "It may be a case of a lot of noise creating privacy." No one can overhear a conversation in a crowded diner or on a busy street.

Masking makes privacy

Although an acoustical engineer was involved in the project, about the only acoustical concession the client agreed to make involved lowering the population density: there is about 25 percent more space per person than conventional offices. While the hvac was designed to produce a steady whooshing noise that masks sound, SEI didn't want to spend a lot of money on noise mitigation, a spokesman for the company says. A bustling environment is more stimulating to workers, he says, and the money saved can be reinvested in employee and client services.

In large open areas, such as those at SEI, background chatter can often mask individual conversations. But in smaller spaces, office noise isn't consistent; during quiet interludes privacy evaporates. That's why Phillips Janson used a sound-masking system to make BEA's bullpen lively but not overwhelmingly noisy and to take the edge off the traders' voices.

Sound masking is a sort of glorified stereo that generates broad-band, low-level white noise and broadcasts it at a constant volume. The sound produced is uniform to within two decibels throughout the space, according to Tom Koenig, marketing director for Dynasound, Inc., a maker of the systems.

Speakers are set on 14- to 16-ft centers, depending upon the number of offices and people and the square footage of the space. They hang from the structural deck above the ceiling and broadcast upward, diffusing the white noise to prevent hot spots. Sound-masking systems sound like air conditioners. Milsom says he once turned off a system and watched 50 or 60 employees simultaneously stand up and take off their jackets.

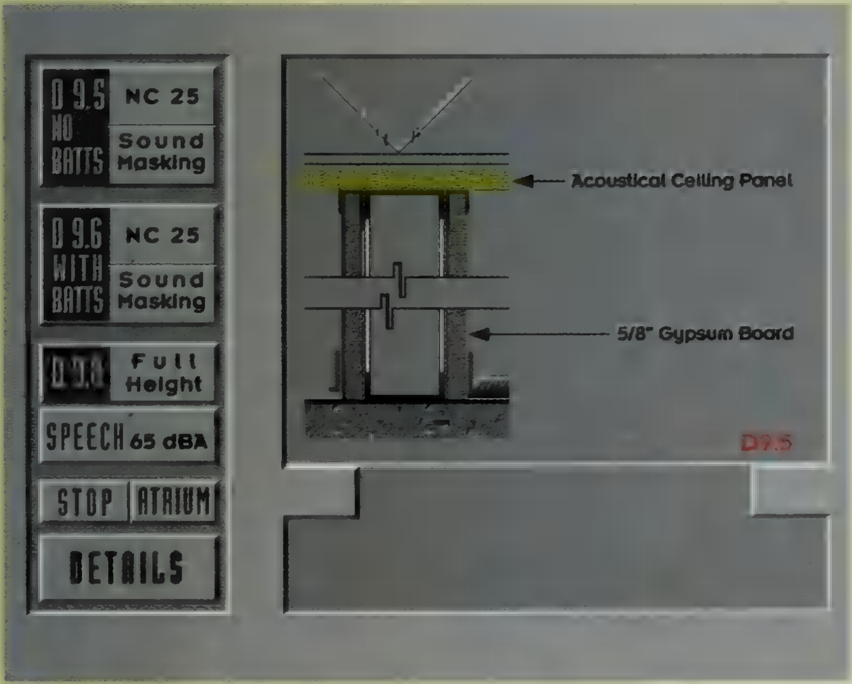
Sound-masking technology has progressed considerably in the past decade. While most acousticians wouldn't have considered it previously, sound masking is now "one of the fundamental parts of open-plan design," says Ken Graven, principal consultant for Charles M. Salter Associates, an acoustical consulting firm in San Francisco.

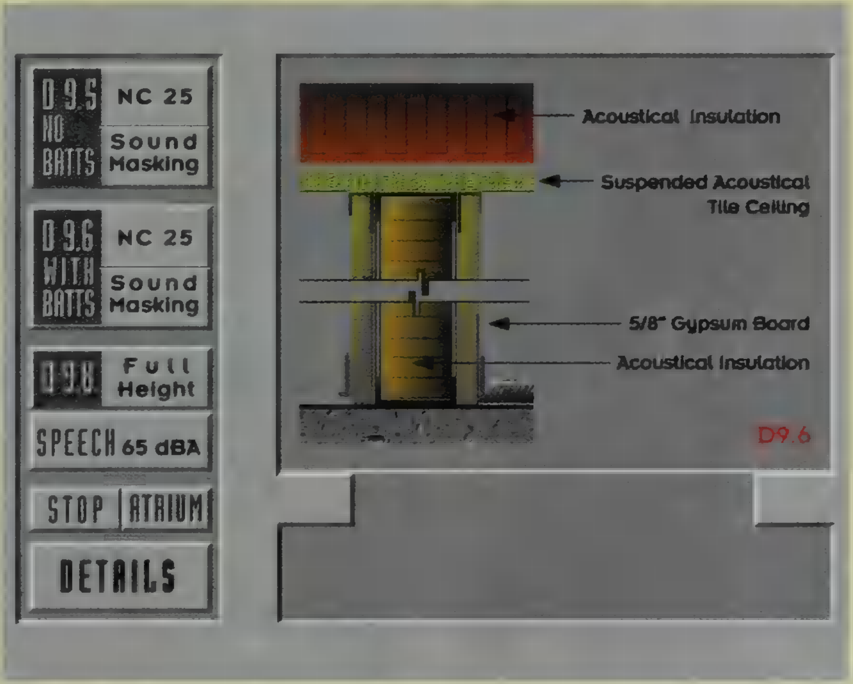
Openness versus noise

In general, open plans include three types of acoustical classes: Class V for loud, interactive group areas; semi-private or Class IV areas are for small groups. Class III is reserved for private offices or partition systems that provide audio and visual seclusion. Classes I and II offer confidential privacy and are hard to achieve in an open area. Systems furniture, screens, changes in floor level, or even different ceiling treatments can be used to create different classes.

Some individuals thrive in noisy or semi-private atmospheres: televisions and video games blare in trendy new-media offices. But other people need quiet. And corporate culture can clash with individual need.

Open cubicles are de riguer for most employees at Apple Computer. But software engineers balked when the company planned a new facility for them in Cupertino, Calif., that would force them out of private offices. Many older engineers are used to having private offices and like the status that goes with it. But more important, because of the nature of the work—writing computer code—they need uninterrupted time to concentrate, say company officials.





"It's essential that the needs of the interior designer, the acoustical engineer and the client be balanced with those of the architect."
—Dennis Milsom

The four architects that designed the interiors of the complex (Gensler, John Holey, Backen Arrigoni and Ross, Studios) tried an increasingly common tack: the "cave and commons," in which clusters of private offices surround open casual meeting areas furnished with lots of soft seating and white boards. The offices are quiet: not only are walls sound deadened, but specially absorptive ceiling panels keep sound from traveling over the partitions, which extend to the panels, but not to the structural deck above.

The private offices are popular. Since completion in 1993, Bill Tagg, senior manager with development, design, and construction for Apple, says more cubicles have been turned into private offices. While there's plenty of activity in the common areas, some of the common space has been "backfilled" with private offices, says Tagg.

Sometimes designers limit their acoustical options. "To architects who insist on white plaster walls, hard ceilings, and wood floors, acoustically rated materials are the architectural equivalent of orthopedic shoes. It's essential that the needs of the interior designer, the acoustical engineer, and the client be balanced with those of the architect," Milsom says.

It is possible to accommodate almost all types of employees in a single open layout, but it requires carefully balancing furnishings, mechanical systems, office layout, floors, ceilings, and walls—the components that make up what Milsom calls "an acoustical system."

Improving sound measurement

Until recently, designers depended on the combined sound-transmission class (STC) and noise-reduction coefficient (NRC) ratings of components to calculate the acoustical qualities of office space. These ratings were increasingly recognized as inadequate for open-office plans, because so much sound bounces off ceilings and passes over and around partitions.

ASTM Committee E-33 is charged with setting office acoustic standards and product-testing procedures that are truer to real-world conditions. ASTM standards for open offices were first introduced in 1993, and are to be updated every few years to keep pace with the range of products and materials available. Manufacturers must test according to a new set of standards to earn ratings. ASTM introduced a new measurement, the articulation-class index, to reflect the speech privacy likely to be offered by the tested assembly. For a quiet environment, designers select products with high NRC ratings—a rating of 1 is perfect, .8 is very good. Articulation class ratings work in reverse—1 indicates a noisy area, .2 is normal privacy, and .05 is total privacy. In theory, office acoustics are measurable during the design stages by averaging out the NRC ratings of the various materials used or looking at the articulation class. But most architects have found from experience that it's practically impossible to know what a space will sound like until you get in it.

Acoustical consultant Charles M. Salter Associates has a simulation lab that uses a combination of computers and broadcast systems to test different construction assemblies for their acoustic qualities. Architects can invite clients into the lab to hear how an open office will sound using mockups made from the actual materials that are specified.

"Computer-generated trials are helpful but having the real things gives clients a much better sense of what they're getting," says Salter's Graven. "It's a good way to fend off employee complaints." (The computer-screen images, previous pages, show clients the kinds of assemblies being demonstrated.)

Coping with cubicles

Open offices have meant a huge increase in the popularity of the cubicle—viewed by many architects as a mixed blessing. Like sound masking, the range and quality of furnishings has improved dramatically, says Gary Wheeler, an interior designer and president of The Wheeler Group in Minneapolis. "Systems furniture is more flexible and more

Team work spaces, such as Apple Computer's "user-defined areas" (left) need to be calibrated to the acoustical needs of clients. (The one shown was designed by Studios.) In these, intentionally formed as eddies in the complex's circulation spine, noise levels can be high. But adjacent private offices need heavily sound-insulated walls to encourage concentrated individual work. BEA Associates, opposite, wanted a hubbub—but not too much of one. Acoustical consultants Shen Milsom Wilkie added sound masking. (Speakers, above the ceiling, are invisible.)

effective acoustically than ever," he says. Panels, for example, are gasketed at the joints to prevent noise from migrating through cracks. They're available in wood, stone, and other materials, as well as fabric—all with sound-absorptive qualities.

Perhaps the best way to guarantee the success of an open office is to give employees the illusion of acoustical privacy. "Taller panels, even when they function only as visual screens, make people feel like their space is quieter," Wheeler says. Soft colors, rich wallcoverings and subdued lighting also make the office more peaceful. A luxurious setting has the effect of making people speak more quietly. But cubicles are still claustrophobic. Workers perceive them as a cheap way to provide a "private" office. And the closed-in spaces prevent light and fresh air from entering the work area.

The lowered partitions, the team-work areas, and the higher noise level of today's alternate office take getting used to—sort of like sleeping in the roar of the city when you're used to the quiet of the country. "In a new facility, the managers may get nothing but complaints for the first month. But by the second month everyone is used to it," Rockcastle says. "Then, walking into a building with nothing but private offices is stultifying. It's as if all the energy was sucked out." ■

Untangling Acoustics Acronyms

Measurements: Decibels (Dba) measure sound intensity. To effectively reduce airborne noise, the designer needs to take into account several frequencies, measured in hertz (Hz).

Sound-Transmission Class (STC): A number that represents the ability of a barrier to reduce the intensity of sound as it passes through. Individual products are tested and given STC ratings. Many assemblies (such as stud walls or doors) are also rated, but the rating of a door with even a small glass light will likely fall closer to the low rating of the window, even if the door itself is highly rated.

Noise-Reduction Coefficient (NRC): Measures a material's absorption of sound. The difference between this measure and STC is that the more absorbent the material, the less sound it will *reflect* back into the room. Typically such measurements are obtainable for products or acoustical materials. Additionally, a publication of the American Society of Interior Designers recommends that systems furniture panels provide a Speech Frequency Sound Absorption average at .80 or greater.

Articulation Class (AC): Another single-digit rating, this is supposed to overcome flaws in the NRC and STC ratings, since neither accurately takes into account the environment of open-office or cubicle plans. These classes are also focused on measuring absorption or attenuation of the human voice and take into consideration the passage of sound over and around partitions and ceiling plenums.

Articulation Index (AI): The shortcoming of all the previous measures is that they rate only the performance of components. The index, derived from testing under ASTM standard E 1130, "Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index," duplicates conditions that actually occur in real-world, open-office environments. *J.S.R.*

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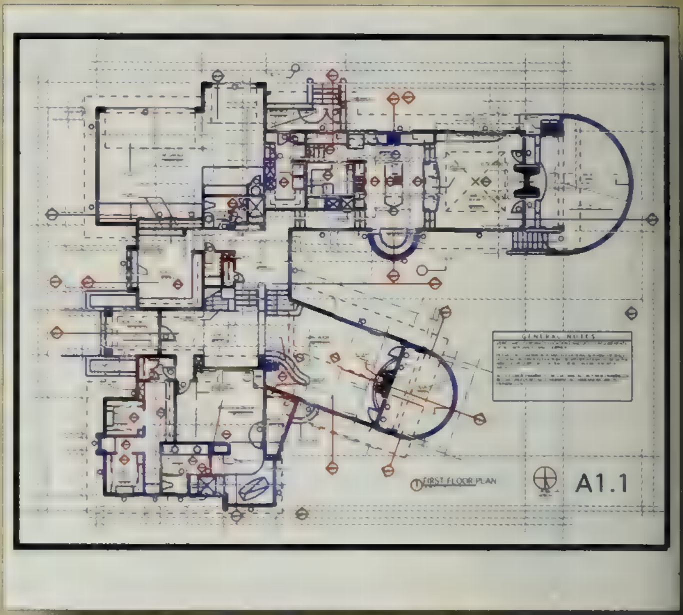

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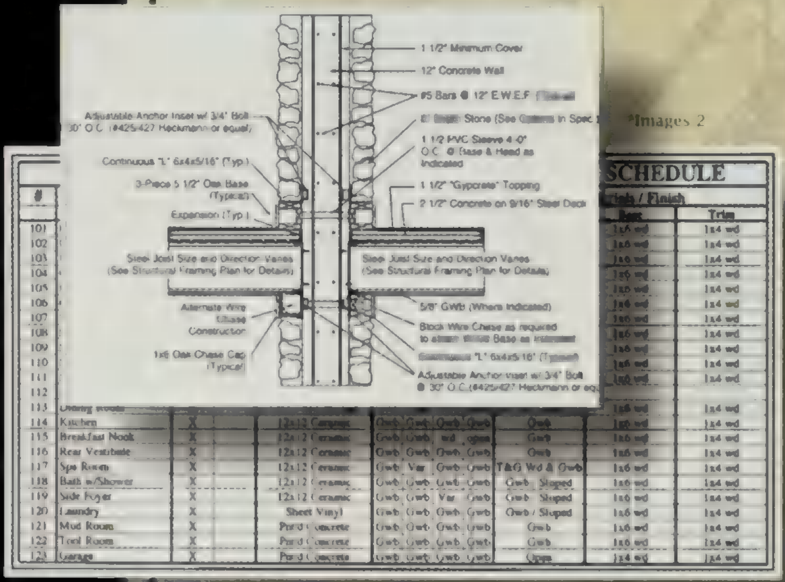

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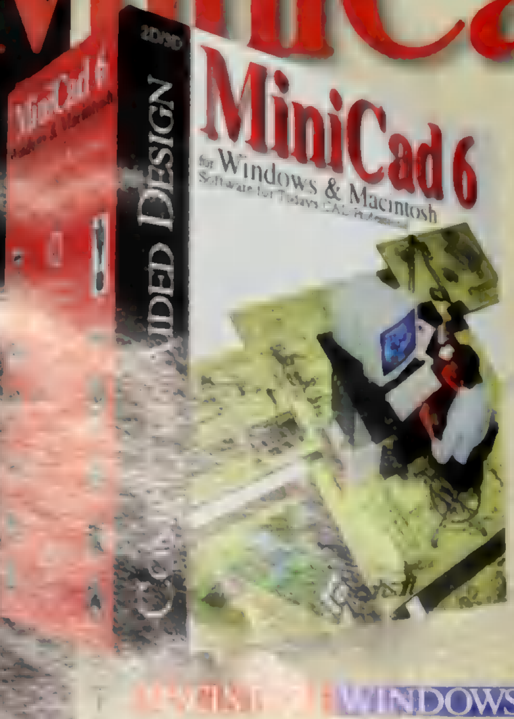

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*Image 1 - Courtesy of Francois Levy, Dick Clark Architects, Austin, TX
*Images 2 - Courtesy of Cameron Lacy, DCL Architects, Wayne, PA
*Image 3 - Courtesy of David Brunke, Herring & Trowbridge Architects, Herndon, VA

Circle 31 on inquiry card

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Architrion Tries a Comeback; Lightscape Reviewed

Here are two programs that take different points of view toward visualization problems: Architrion VI and Lightscape 2.01.

By Steven S. Ross

It's been a long time since we looked at Architrion, once king of the hill among high-end 3D Macintosh CAD software. The reason is simple: There wasn't all that much to look at. Architrion stored 3D information in simple entities—cubes, essentially. That was a terrific idea for the slow computers of the 1980's. But it limited flexibility. For instance, Architrion had trouble drawing sloping walls and roofs.

As faster computers came available, Architrion remained long overdue for an upgrade. But its ownership changed, and Architrion missed its best window of opportunity. ArchiCAD filled the void, along with MiniCAD and others.

To catch up, BAGH had to release a total rewrite this summer. The rewrite had bugs; fixes should be out now. The overall package seems well-conceived and easy to use.

The lesson: Architects cannot expect a risk-free environment when it comes to software. Vendors on top don't always stay on top. Mitigating the risk, however, is the trend toward more standard file formats and toward specialized software modules (rendering, drafting, and so forth) that work together. All the packages we looked at for this month's reviews can handle DXF well, for instance.

Architrion VI

Vendor: BAGH Technologies, 4446 Boulevard St-Laurent #300, Montreal, Quebec, H2W 1Z5, Canada. 514/285-1717, 800/561-0522, fax 514/285-1365, http://www.architrion.com.

Equipment required: Macintosh (PowerMac 6100 or higher, System 7.5 or higher, 40MB RAM recommended), Windows NT or 95 (40MB of RAM recommended), Silicon Graphics. You can run a reduced version (without ACIS solid modeling) in a Macintosh with as little as 24MB of RAM running a 68K-class CPU with math coprocessor, or on a 486-class Windows 95 computer with 32MB.

Cost: $3,595 ($4,950 Canadian) until Dec. 31, regular price $4,495 (in Canada $6,300). Includes one year toll-free support. Competitive-upgrade pricing available; contact BAGH at 800/561-0522.

This long-awaited upgrade of what was once one of the most advanced 2D/3D drafting and modeling programs for the Macintosh still has some rough edges—edges that are due to be smoothed in further upgrades promised for this month and January. Architrion VI now also runs on Windows and Silicon Graphics Unix computers. We intensively reviewed in Windows 95 but have worked with the software on the Mac as well.

The Architrion interface is somewhat familiar as it has been copied by others—you are always editing in 3D; even when you place an object in 2D, it has 3D attributes. But the suite of drawing tools beats most others. You can create a complex 3D profile by sweeping a complex 2D shape through space, or combine primitives such as spheres and cylinders to make complex forms.

In a sense, Architrion combines good drafting tools with good boolean modeling tools, such as splines and fillets, and allows rendering as well. Those who do complex interior design will find it particularly useful—it runs fast and has outputting tools that are good for working with less-sophisticated clients. But it is certainly suitable for full-blown CAD duties as well.

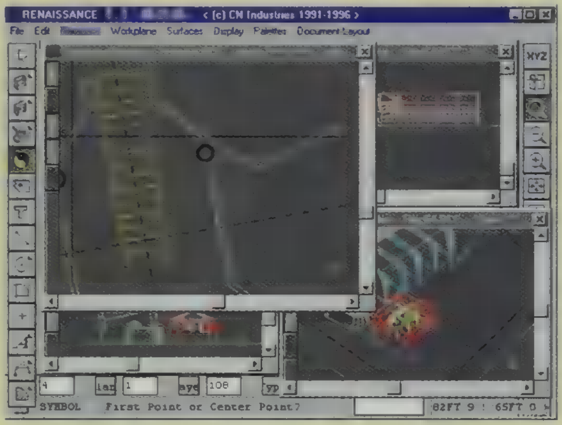
All that being so, should you invest? That's a tough call; the company has fallen behind many of its competitors just in terms of marketing power and current market share. If you have been using Architrion V, the upgrade will not be seamless; the internal file structure has changed quite a bit in this upgrade. This makes switching to an entirely new system less difficult to contemplate.

If you are using a Macintosh, any new upgrade will probably run more slowly than older existing software—but this version of Architrion will run faster on the Mac than the new versions of ArchiCAD and MicroStation for the Mac.

Architrion certainly can co-exist with AutoCAD (it imports and exports DWG and DXF) and in offices with multiple computer types. Thus, if speed is important to you, and the specific modeling tools available on Architrion are particularly important as well, you owe yourself a close look.

Manuals: Two large looseleaf binders; 278-page tutorial and installation guide and 380-page reference.

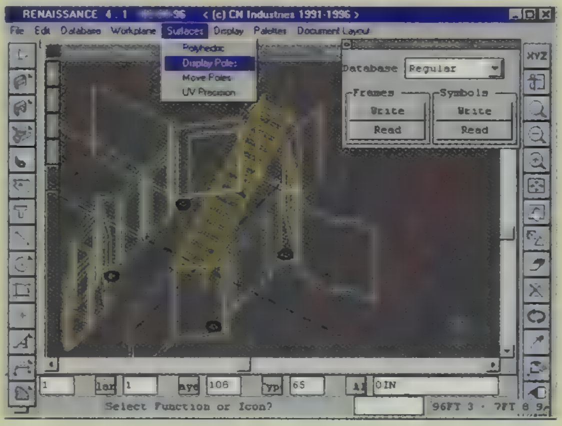
Ease of use: The quick response time makes up for a lot of rough spots in the interface. The software comes with numerous symbols and textures.



SYMBOL First Point or Center Point?

82FT 9 : 65FT 0

Architrion lets you put four views on-screen at once. They can be set up in a grid or resized to overlap one another randomly.



Database Regular

Select Function or Icon?

96FT 3 · 7FT 8 9

You can draft in one window and check the database of symbols and frames (symbols on windows, doors, etc.) with Architrion.

Error-trapping: There's undo and good on-screen prompting if you plan to do anything that might overwrite data. There's also autosave and a recovery file. You can display the history of an element, even from the beginning of a project.

150 *on Reader Service Card*

Software Reviews continue

Lightscape 2.01

Vendor: Lightscape Technologies, Inc., 1054 Saratoga-Sunnyvale Rd., Suite 200, San Jose, Calif. 95129, 800/343-0073, 408/342-1900, fax 408/342-1910; http://www.lightscape.com.
Equipment required: Intel-CPU computer running Windows NT with 32MB of RAM. A display card capable of OpenGL acceleration will speed work. We reviewed with NT 3.51.
Cost: Windows NT version is $2,995; SGI is $4,995; 90 days free support. Resellers are buzzing about significant price drops due soon. For retailer nearest you, contact the company.

This fast, stable, and feature-laden 3D rendering package can turn almost any 3D image into a photo-realistic scene. It requires Windows NT and 32MB of RAM—about average resources for this class of software. Still it does not require a degree in rocket science to use. And because it does not depend on slow ray tracing, but uses radiosity (light energy) calculations by default instead, it won't tie up your computer for a day at a time while it calculates how the final rendering will look.

The final results are, nonetheless, extremely pleasing to the eye. Why? Calculating the radiosity of a surface is easier for the computer than "ray tracing" every beam of light from the eyepoint back to a source. And the final results are quite similar as long as the light sources are diffuse—as they almost always are.

On the other hand, if you have a scene with lots of reflections, or with mainly point light sources—a candle-lit dinner party, for example—ray tracing will be more accurate although radiosity might capture the "mood" adequately. (Shadows will be more diffuse than they would appear in real life with radiosity processing, for example.) Lightscape has ray tracing if you need it; this is also faster than you might expect because Lightscape calculates "rays" from primary light sources in the first radiosity iteration [illegible].

[illegible] computer [illegible] calculates [illegible] When it is done, it calculates the interactions between light sources. It can do multiple iterations of those interactions (each reflecting surface becomes a new light source to be added to the next iteration). Depending on your scene, you may find 10 to 20 iterations adequate; that's great for working fast. Once you have an image you want to refine further, you can always let the computer run all night. You'll be sure of a usable drawing in the morning, barring hardware failure.

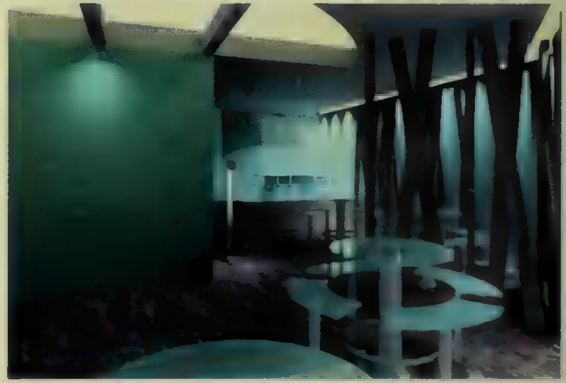
The biggest trick, it seems, is to carefully define light sources that are internal to the scene—lights that will be visible in the final rendering. Surface texture and properties may also be critical, depending on their placement and composition. Lightscape provides plenty of sample starting points you can modify to match your precise situation.

You define such attributes in the "preparation" stage, where you can edit the model you will be rendering. Next, the resulting file is altered by Lightscape to optimize it for radiosity processing. You won't see the changes directly, but Lightscape does. It saves them in a separate file, apart from the preparation model. Lightscape turned out to be quite forgiving about minor errors in the original drawing files—walls that don't quite meet ceilings, and light sources that float off the walls, for example.

Blocks that give off light are called "luminaires" in Lightscape. You take a block and associate it with photometric gradient data (there's a large library for standard fixtures, and you can make your own). If the light gradients are asymmetrical (and they almost always are, of course), you orient the block to match your scene's needs.

Lightscape is certainly not a full-featured modeling system. That is, the scenes you render will almost always be imported from CAD or modeling software. But it has some ability to import and manipulate 3D symbols (blocks) such as chairs and tables. It comes with some symbols of this type.

"Housing Study" by David Hileman, with a subtlety and warmth in Lightscape image.


"Bar" interior by Agata/Andrzej Wojaczec. Note reflections and transparency.

Because Lightscape must import files from other software, we checked import filters carefully. The import filter most architects will use is DXF. The error that this is most likely to cause is one of scale. If you are off when you select the scale of the incoming DXF, the scene will not match the scale of the luminosity gradients you've inputted for the light sources. You can also import from 3D Studio.

DXF files from other than AutoCAD may not share the default color mapping AutoCAD and Lightscape both use; check that, too. Lightscape also has a packaging deal with Graphisoft for ArchiCAD.

Manuals: Three paperbacks: A superb 125-page tutorial (heavy on time-saving techniques and why they work), 300-page user's guide, and a "getting started" booklet.
Ease of use: Good on a capacious machine. With large scenes, we found it runs better on a slow 75 MHz Pentium with 48MB of RAM than on a 166 MHz Pentium with 32MB.
Error-trapping: There's no undo. Save early and often. Changes the system makes to the preparation model do not overwrite the model's file; they always stay separate.
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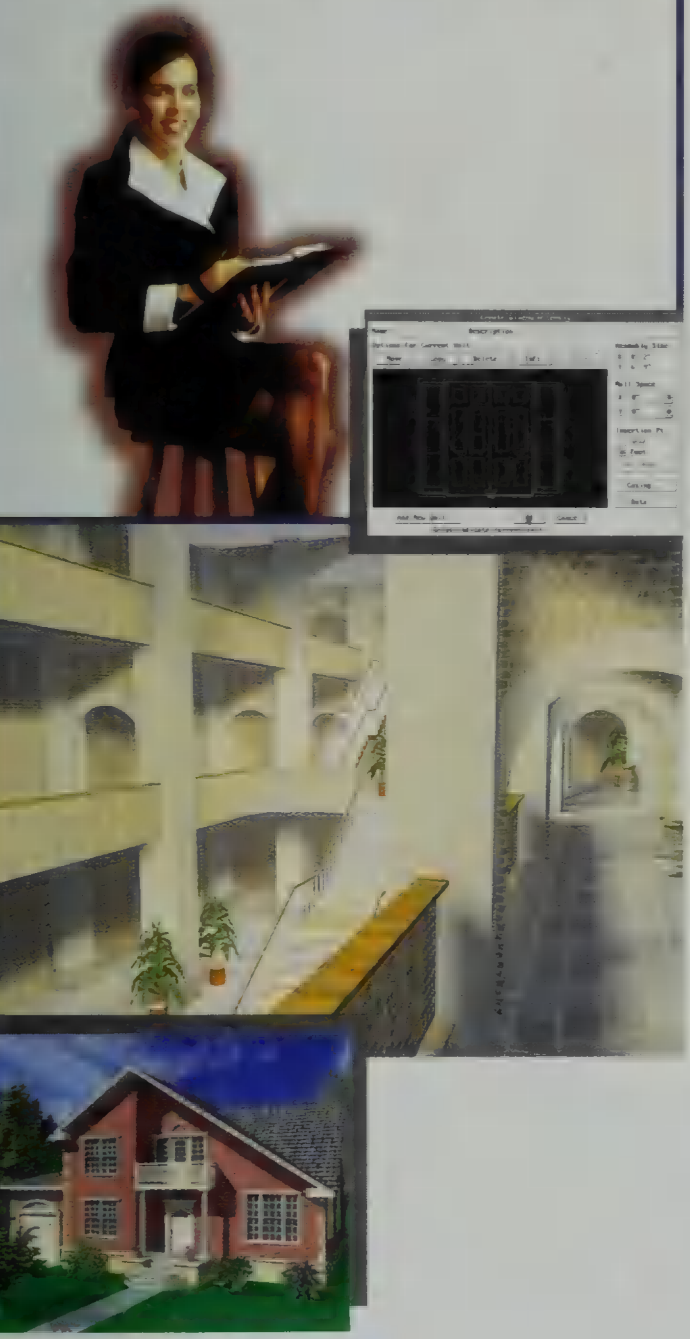

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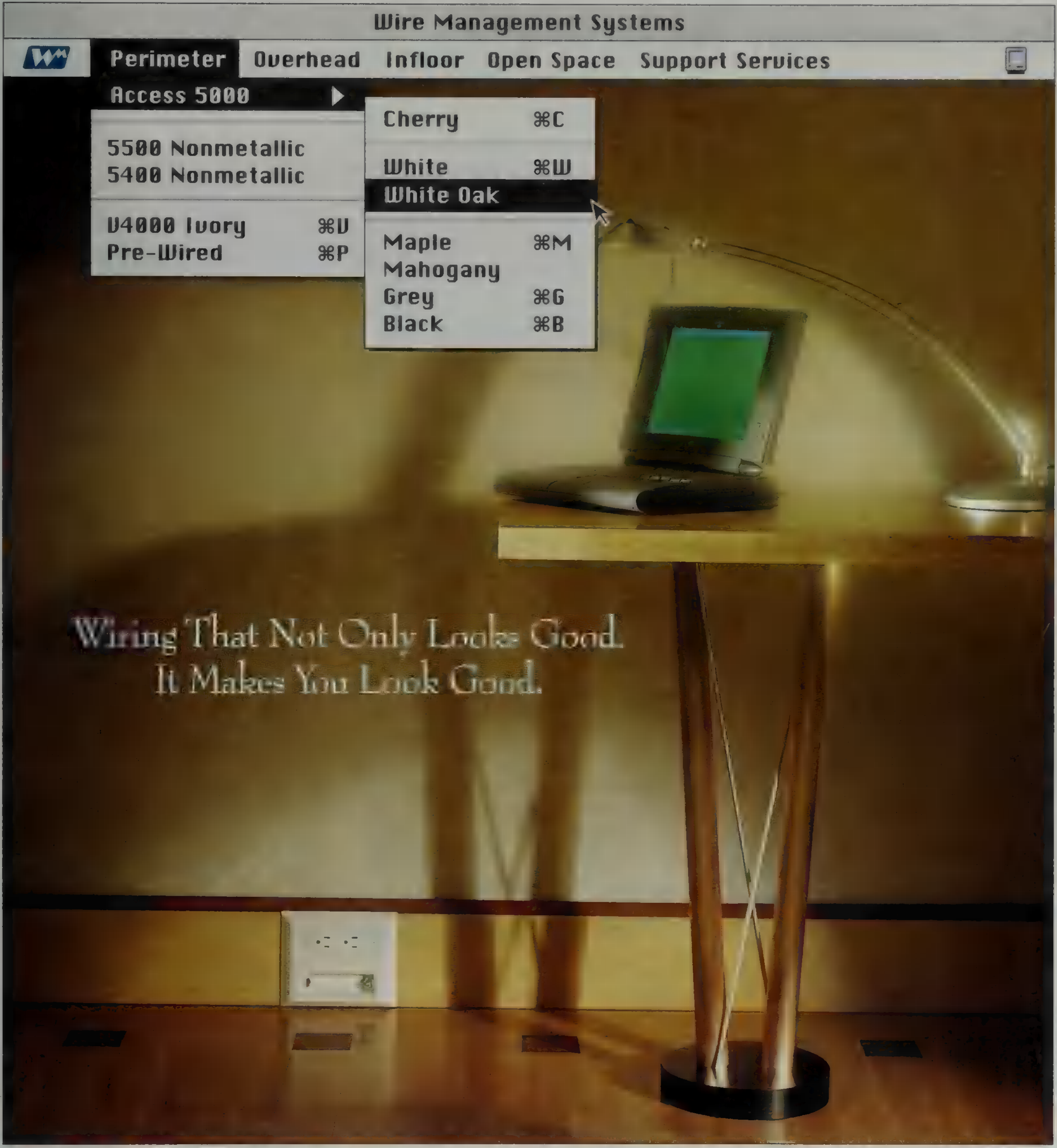

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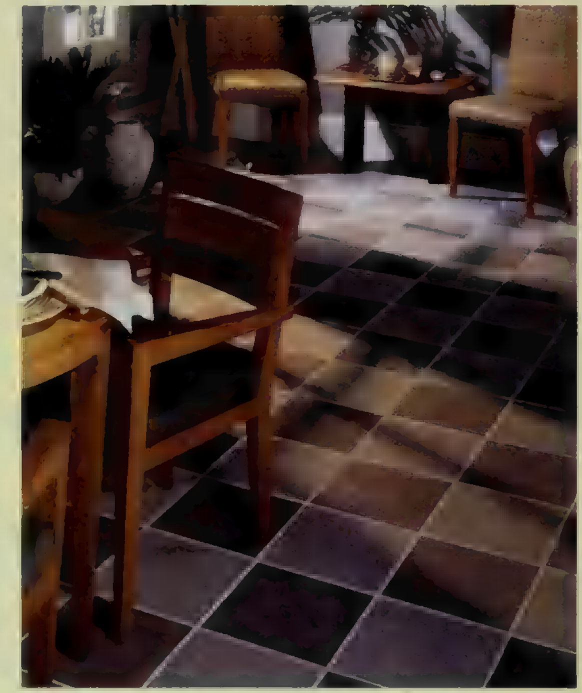
Slip-Resistant Flooring

Slip resistance in flooring proves highly elusive. In our litigious society, what is too slippery for some may be fine for most. While other factors contribute to falls, such as poor lighting, uneven or loose surfaces, and unexpected obstacles, the measured coefficient of friction (COF) of a surface is the most reliable indicator of its inherent slip resistance. The higher the number (by tests such as those cited below) the more slip-resistant the surface. While there are currently differing test protocols (such as ASTM C-1028 for ceramic tile and ASTM D 1047 for resilient flooring) there are several unofficial standards of recommended coefficients for flooring in different situations. OSHA recommends a value of .5 for walkway surfaces. The ADA guidelines suggest at least .6 for flat surfaces and .8 for inclines.

There are several kinds of tests performed to obtain a coefficient of friction rating for flooring. A static test used in America places a 3-in. square of a usual heel material on a test sample with a 50-pound weight on top and drags it horizontally with a pull gauge. A dynamic test used in Europe moves a test "sole" of leather or Neolite material over the floor sample, precisely measuring the amount of force necessary to make the sample skid. For Germany, the DIN standard test is an almost Rube Goldberg-like procedure. Wearing a ceiling-hung safety harness, the test operator dons a pair of rubber-soled boots and tramps on a treadmill surfaced with the floor material being tested. As he marches along, the treadmill is inclined to the point where the boots slip. All of these friction tests are done under both dry and wet conditions.

Slip-resistance shouldn't be the specifier's only concern. A surface that is highly textured or covered with diamond-hard grit can be difficult to clean. A floor can be too tactile, causing persons with a shuffling or impaired gait to stumble. And a floor's installation and ongoing maintenance should be considered. Architects must be careful not to specify adhesives, cleaning solutions, and finishing systems that [illegible] lines on toxicity. Check that products are registered in the state where the work is to be done and comply with that state's safety and hazardous-materials laws.—Joan F. Blatterman



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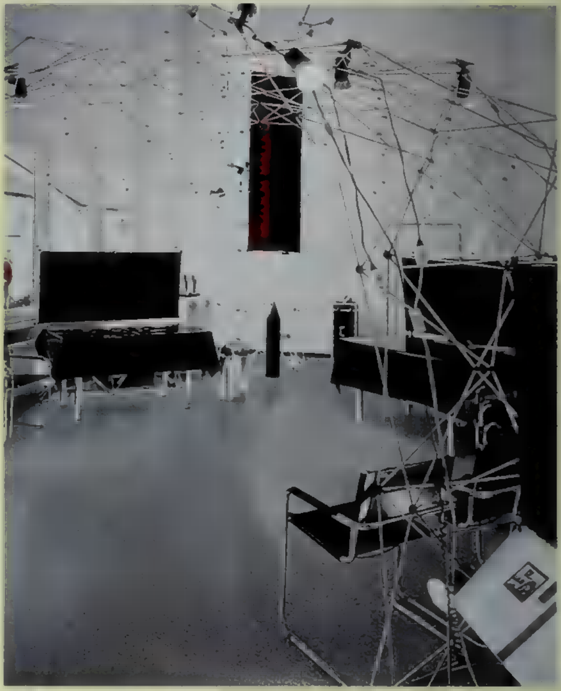

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153. Colorful granite-look tile
Terra Granite commercial ceramics have a slightly textured, slip-resistant finish that meets ADA guidelines. Suitable for retail spaces, malls, and lobbies, the floor comes in 11 colors—from Coal to Linen—that coordinate with other Olean products. Sample Express: 215/822-7300. American Olean, Dallas.

154. Slip-resistant porcelain
A flooring option developed for very-heavy-traffic locations that require a higher-than-usual coefficient of friction, Cross-Plus tiles have Carborundum grit fired into a vitrified surface. Said to be easy to clean, no waxes, sealers, or other topical applications are required. Fourteen colors are stocked; custom colors and an architectural sample program are available. 800/221-9093. Crossville Ceramics, Crossville, Tenn.

155. Light-colored rubber flooring
The newest Noraplan design, Effect has a smooth, matte surface with a three-dimensional appearance and random-chip design. The nine "brighter" colorways were selected specifically to improve the esthetics of school and health-care environments. 800/332-NORA. Freudenberg Building Systems, Inc., Lawrence, Mass.

156. High-style "safety" floor
Altro vinyl, developed for applications such as pharmaceutical plants where both slip-resistance and cleanability are vital, incorporates aluminum-oxide granules throughout the material for a long lasting, high level of traction. Designer 25 colors include decorative, soil-hiding patterns for heavy-traffic areas; *Architectural Guide* is offered. 800/382-0333. Altro Floors, S. San Francisco, Calif.

Preventing slip-and-fall accidents should be a high priority when specifying flooring for public spaces. The materials shown here address this issue in effective ways.

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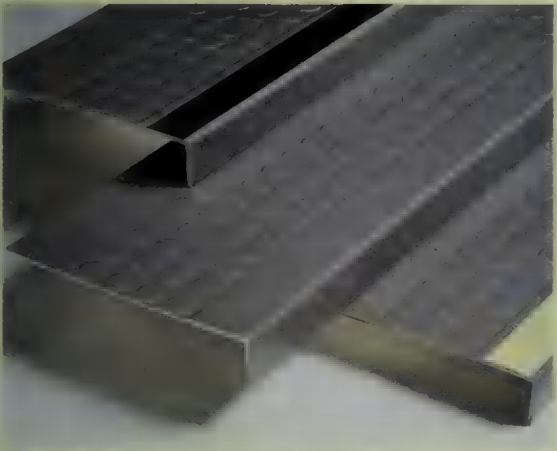
158

157. Slip- and stain-resistant tile
A rugged commercial ceramic tile suitable for stain-prone applications such as fast-food restaurants, supermarkets, and malls, Granite Plus meets ADA accessible-route criteria when either wet or dry. Tile comes in six neutral stone colorations, and 8- and 12-in. sizes. 800/FLA-TILE. Florida Tile Industries, Lakeland, Fla.

158. ADA-compliant stair treads
Part of a complete line of resilient products, a redesigned version of the Roundel rubber tread meets both federal and California disabled-access requirements. The 2-in. hinged nose fits a number of stair-pan profiles; the tread allows for insertion of a 2-in.-wide contrast-color grit tape without cutting into the raised-disk pattern of the rubber. 800/899-8916. Johnsonite, Chagrin Falls, Ohio.

159

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159. Monolithic flooring
A two-part epoxy resin surface made for use on damp as well as dry concrete, Floor-Gard systems combine a high-gloss polyurethane surface with slip-resistant aggregates. Suitable for medium- to heavy-duty industrial and institutional spaces, the floor comes in five standard colors. 214/353-1689. Neogard, a Division of Jones-Blair, Dallas.

160. Fiberglass floor plate
From a line of aggregate-surfaced floors and gratings, Chemplate is a solid, non-slip flooring made of corrosion-resistant fiberglass with embedded silica particles. It insures slip protection even in sites where oil or grease may be present. When integrally molded to a structural-fiberglass grating, plates can be used to create a weatherproof ramp. 800/345-5636. Chemgrate Corp., Addison, Tex.

161

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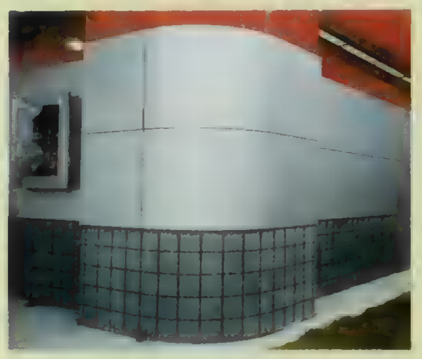
161. Anti-slip floor treatment
A transparent coating, Safety Surface Plus is said to impart a reassuring level of slip resistance to existing vinyl, tile, stone, and terrazzo floors, even under wet conditions. While no special maintenance is required, the coating will wear off under normal traffic, and needs to be reapplied at least every six months. Treatments are formulated to suit different floor surfaces. 800/544-1443. Aegis Floorsystems, Inc., Dallas.

162. Polyurethane/rubber coating
Developed as a protective and skid-resistant surface for loading docks, Durabak meets the ADA contrast-color and non-slip requirements for curb ramps. A single-component coating made with rubber from recycled tires, it bonds to most surfaces. 800/766-1669. Cote-L Industries, Teaneck, N.J. ■

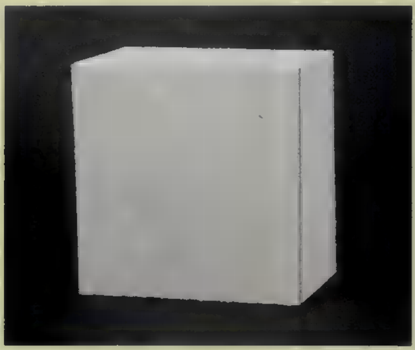
163. Cast-iron pavilion
Created for this year's Atlanta Olympics, the Woodruff Park Pavilion incorporates historic details in a custom-designed open-work strut cornice that supports an impact-resistant frit-glass dome. CAD-based solids-modeling methods let the designer view customized site amenities assembled from component castings. 800/824-2157. Robinson Iron, Alexander City, Ala.



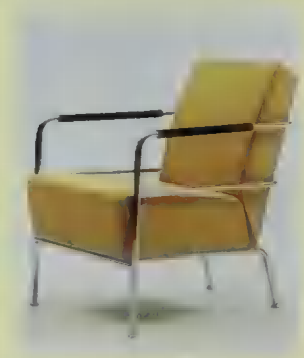
164. Curvable cladding panel
A new simulated-block pattern, the Stenni panel is a composite glass-fiber-reinforced, aggregate-faced panel that can be formed to a 36-in. radius without heat or special equipment. Described as impact resistant and weatherproof, the panel is shown here used as a wainscot on Texaco Oil's new Global Image service station prototype. 800/933-8700. United Panel, Inc., Mount Bethel, Pa.

165. Paint with a 50's feel.
The exuberant hues of Eisenhower-era suburbia are replacing Southwestern teal, peach, and coral, according to this maker's retro-influenced Preservation color palette. Line includes shades such as Chartreuse, Pink Flamingo, and Radiant Lilac, as well as Roycroft Arts & Crafts colors like Studio Blue Green, shown. Samples: 800/552-7579. The Sherwin-Williams Co., Cleveland.

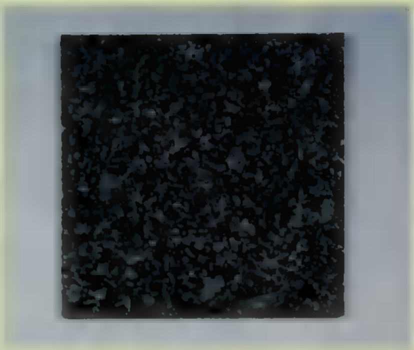
166. Under-cabinet light
A new low-profile fluorescent fixture designed for workplace illumination, the Finesse light has a smooth, solid-metal front that makes it less obtrusive when mounted close to the rear wall under storage cabinets. Housing comes in lengths up to 60-in. (for a 40W T8 lamp); a snap-in lens supposedly provides even, shadowless light distribution. 770/922-9000. Lithonia Lighting, Conyers, Ga.



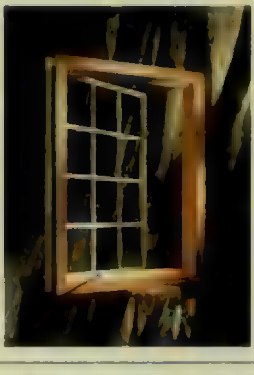
167. Fire-tested structural panel
The new Firefinish version of R-Control's structural panel with an expanded-polystyrene core offers a fire-resistive, ready-to-paint interior face. This configuration eliminates the need for an additional gypsum board layer, and meets code requirements as a 15-minute thermal barrier. Finish options include a fine texture for walls. 800/255-0176. AFM Corp., Excelsior, Minn.



168. Tubular-frame lounge
Designed by Swedish architect Gunilla Allard, the Cinema armchair has a Modernist appearance with subtly curved, leather-wrapped arms. Style is available as a two-seat sofa, an ottoman, or as the armchair pictured. Finish options include chromed or powder-coat metal and leather or fabric upholstery. List price as shown: $1,690. 800/237-1625. ICF/Nienkamper, Norwood, N.J.



169. Green granite
A medium-grained, gray-green stone, Lake Superior Green granite is mined from a newly opened quarry in northern Minnesota. The stone is described as having a consistent grain structure with exceptional contrast characteristics. Full ASTM test data are available. 800/328-5040. Cold Spring Granite Co., USA, Cold Spring, Minn.



170. Upgraded casements
Casement windows now come in more sizes and with a heavier-duty crank operator capable of handling units up to 3-ft wide by 6-ft high. Hardware options include a tuck-away handle colored stone or white. Casements are rated a Performance Grade 60 under National Wood Window & Door Association specs. 800/426-7691. Andersen Windows, Inc., Bayport, Minn. ■

Short Takes

New name. A-T-I (Alucobond Technologies, Inc.), is now Alusuisse Composites, Inc., to better communicate its status as part of Zurich-based Alusuisse-Lonza Group.

Prison construction forecasts. A statistical digest published monthly, *Corrections Compendium* prepares forecasts of prison construction and renovation projects nationwide, reporting budget and funding status. Tables outline specific facility construction plans. $60 for 12 issues. CEGA Publishing, PO Box 81826, Lincoln, NE 68501; 402/464-0602.

Mergers & Acquisitions. Franke, Inc., North Wales, Pa., the American subsidiary of The Franke Group, Aarburg, Switzerland, has acquired the assets of UNR Industries' Home Products Division, also a manufacturer of stainless-steel and composite-material kitchen sinks. The acquired lines, to be marketed as the Federal Home Products Division of Franke, Inc., will be headquartered in Ruston, La. In another building-product takeover, RPM, Medina, Ohio, a billion-dollar manufacturer of waterproofing coatings and sealants, bought Okura Holdings, Inc., Dallas, maker of Fibergrate and Chemgrate brand fiberglass-reinforced plastic gratings and structural products. ■

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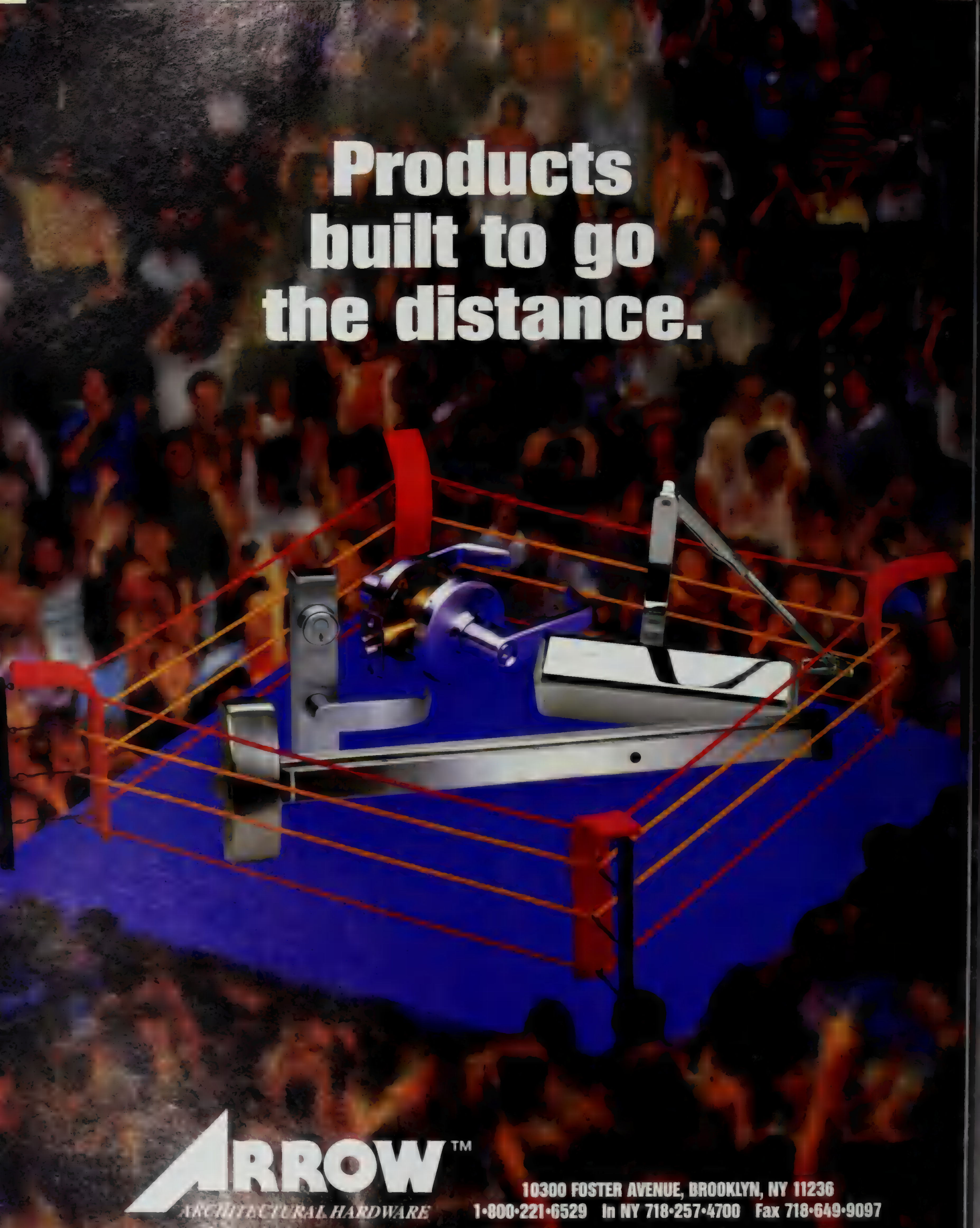
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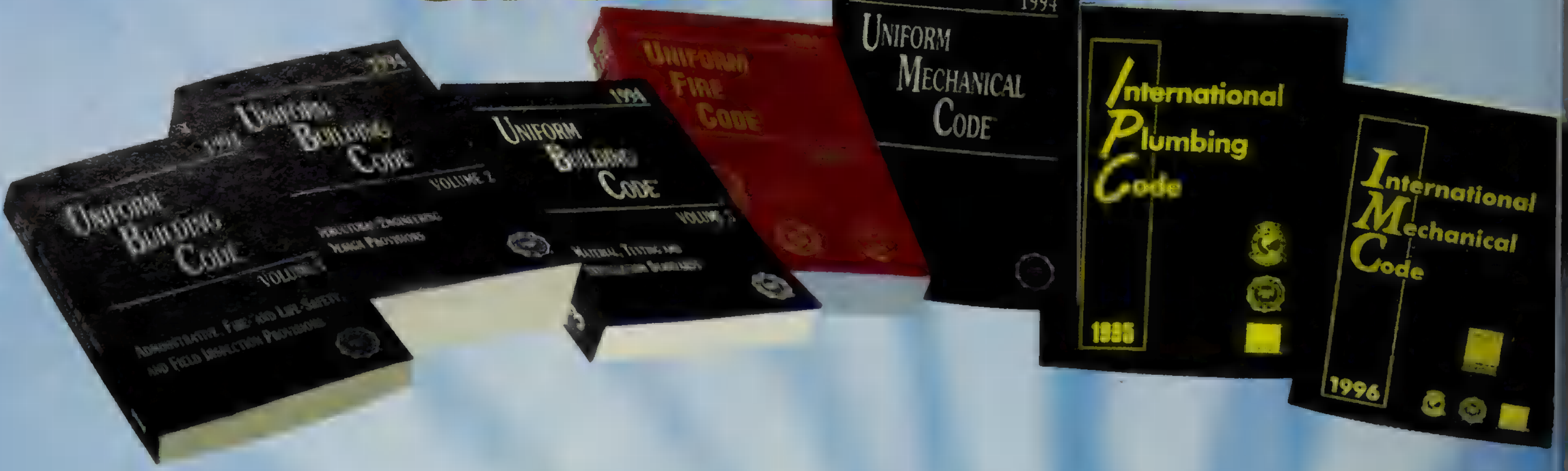
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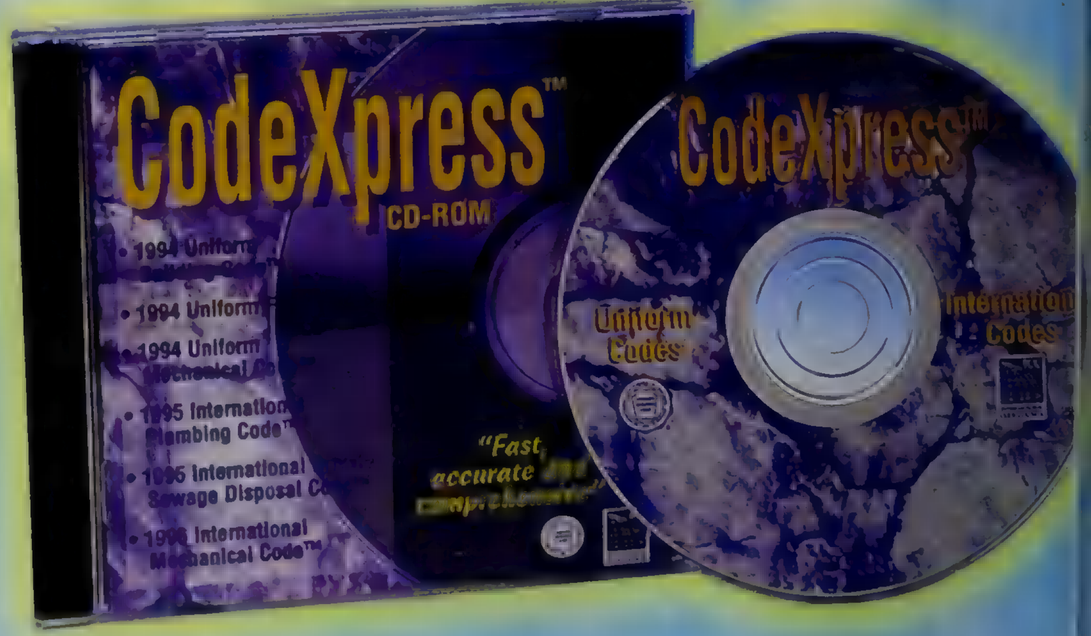
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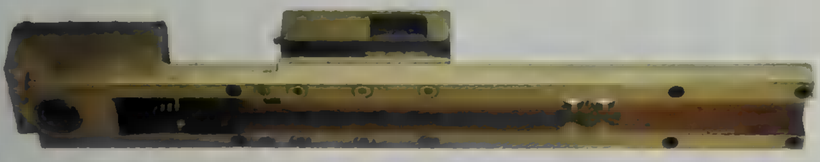

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Cast bronze bottom arm

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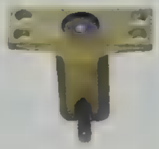

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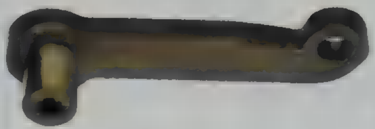

Cast bronze top arm

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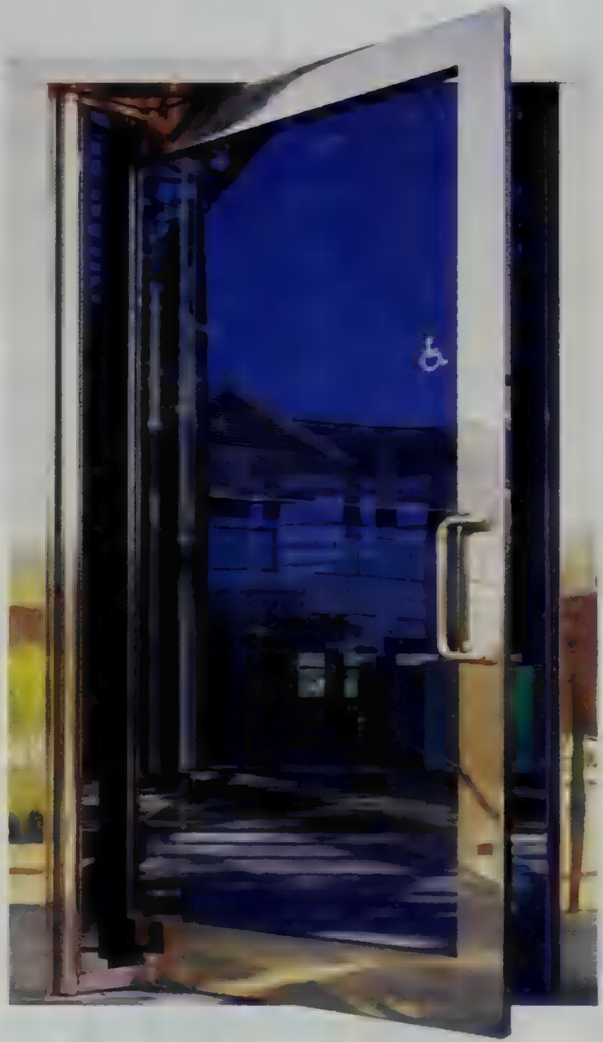

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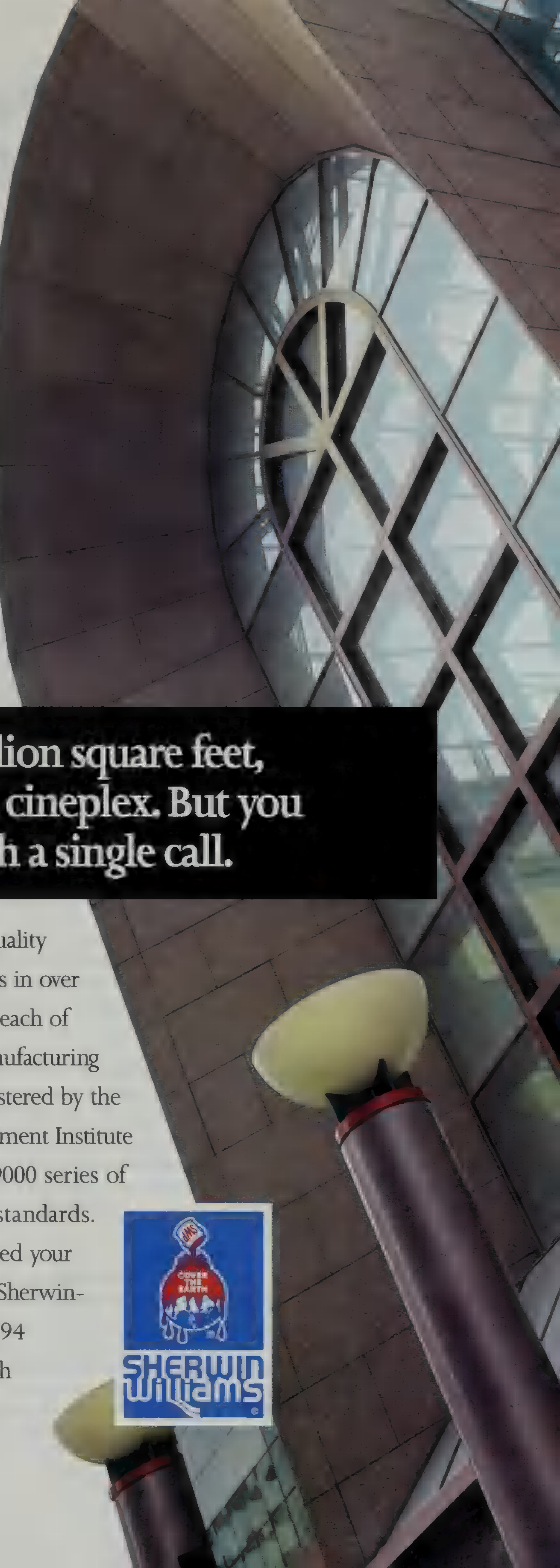

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OPINION

The Boldness Gap: Why America Is Falling Behind Other Countries

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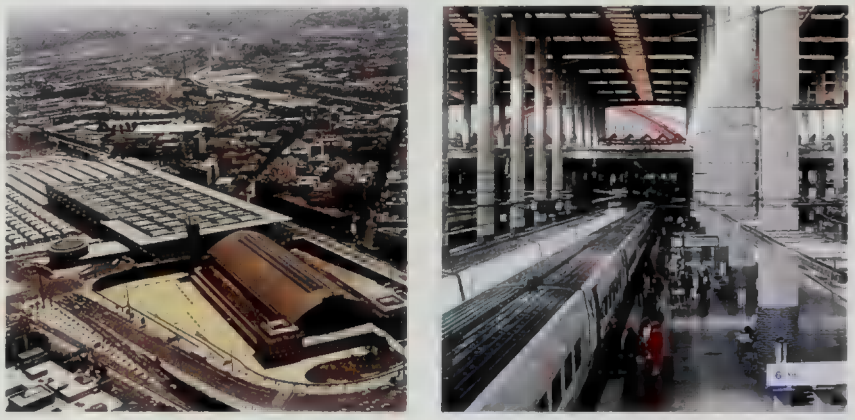

Rafael Moneo's buildings exhibit a boldness that some say is lacking in American architecture. Two of his buildings are cited as examples: the Atocha Railroad Station in Madrid (above left and right), and the Museum of Roman Antiquities in Merida (far right).

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By Robert Campbell

Architecture in other countries is different. It's bolder. More intense, more daring.

I'm thinking of East Asia and Europe especially. It's not only the architecture, either. It's the urban design as well. American stuff, today, looks weak and confused in comparison. Compromised. Visionless.

I was struck by this thought recently when I happened to spend a week in Spain, where I'd been sent by the Pritzker people to look at the work of the prize-winning Spanish architect Rafael Moneo. Moneo's work is strong in a way we're not used to here. There's a clarity of intention. You get the impression that somebody was fully in command. Moneo's buildings don't look like the work of the famous committee that set out to design a horse and instead created a camel. They look like thoroughbreds.

Moneo's clients were enlightening, too. Without exception, they were [illegible] of their buildings. At the same time, like clients anywhere, they were "always" [illegible] about every aspect. But it clearly hadn't occurred to them to interfere with the architecture. One client pointed out some minor problems of cost and practicality, then said: "We hired too good an architect for an [illegible] our size." He said it with a sort of rueful admiration—as if he'd bought a Porsche he loved, but couldn't quite afford. Architects in the U.S. would kill for that kind of standing. No wonder his buildings are powerful. As I went from Moneo's vast, inventive Atocha railroad station in Madrid [RECORD, July 1991, pages 222-229] to the amazing San Pablo airport in Seville (in which, with memorable panache, he marries a modern transit facility with an allusion to Spain's Moorish past), to his great and unforgettable Museum of Roman Antiquities in Merida, I kept asking myself what U.S. architect today is allowed this kind of scope for his talents? And it's not only the buildings that are impressive. It's the public world in general. Part of the time, I was traveling on the Spanish bullet train, the AVI, relaxing in my sofa-sized seat while attendants plied me with drinks and meals.

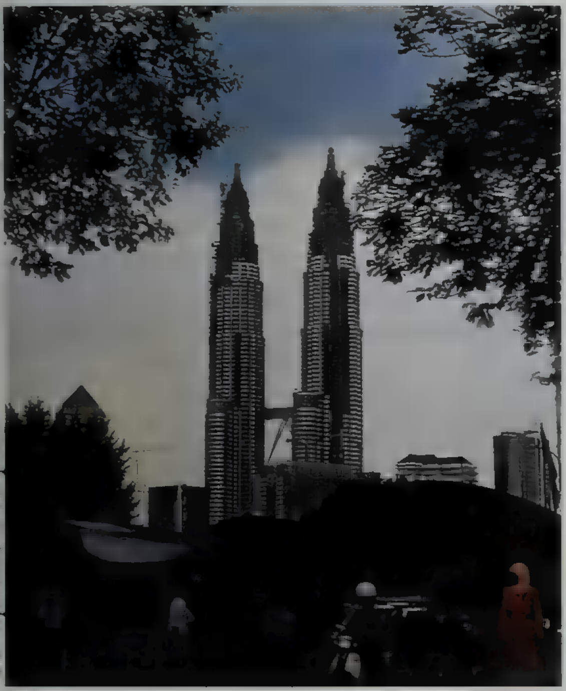
Contributing Editor Robert Campbell was awarded the 1996 Pulitzer Prize for criticism.

Boldness, freedom, invention, excitement—they're not the whole of architecture. They can lead to arrogance. But they're among the necessary ingredients in any memorable art. Surely you've got to have them if you hope to gain the attention and support of the general public. And, surely, they're more visible at the moment in other parts of the world. One thinks immediately of such astonishments as Renzo Piano's Kansai airport. Or the Babe Ruthian charge for the title of World's Tallest Skyscraper in East Asia. Or the grands projets in Paris. Or the bold gateways at each end of the Channel Tunnel, by Nicholas Grimshaw in England and by Rem Koolhaas and others in France [RECORD, January 1993, page 27]. Or the Chunnel itself: a public work on a scale we Americans have forgotten how to accomplish.

Who's the top gun in town?

In the last year I've also happened to visit Berlin, where everybody seems to be arguing constantly about the right way to rebuild the city. And Barcelona, where the reconstruction for the Olympics—including, for starters, a whole new waterfront, with major improvements to the street and sewer systems—[RECORD, August 1992, pages 98-118] makes our recent efforts in Atlanta look Little League. When did we stop being the top gun in town?

When I got back from Spain, I thought I'd check out these impressions. I called up some friends. They're all creative architects or educators, usually both, who've worked and observed in the U.S. and abroad. Since they don't want to offend their American clients, I promised not to embarrass them by naming them, and some I have disguised. Without a single exception, they agreed with my premise.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Boldness, freedom, invention, excitement are among the necessary ingredients in any memorable art, says Campbell. "One thinks immediately of such astonishments ... as the Babe Ruthian charge for the title of World's Tallest Skyscraper in East Asia" (left). The Petronas Twin Towers in Kuala Lumpur, Malaysia by Cesar Pelli & Associates.

The argument in Berlin is all about politics—about whether the new architecture and urbanism looks too fascist, or too American, or too whatever.

"Korea is radically different from the U.S.," said one. "I'm going to do my best work. They want my best work. They ask me if I'm happy. There's an artistic tradition there, that an architect is connected to a broader artistic social and cultural world. I'm the expert."

Another: "They don't mess around with my design in Austria. It's really amazing. They needed a radical amount of change in the floor layout, yet they never suggested touching the architectural envelope. That was our territory—sacred territory—it was just assumed that's our work and not to be tampered with. We had to be the one to suggest changing it. It's a completely different world."

Another: "Here in the U.S., I've got so many brakes on me, so many governors operating, you literally can't work, can't think, can't have your own basic process."

Maybe these guys are being fair. Maybe not. Let's assume they are. We might learn something. I'm trying to start an argument, not preach a sermon. What's wrong? What could be creating a richer soil for architecture in other countries?

Since this is a magazine, let's start with the press

I'm in Madrid. There are two major papers. Each of them, like U.S. papers, puts out a weekly guide to culture and recreation. The difference is that in Madrid, each guide devotes a full page every week to architecture. And they give you serious, controversial stuff, not celebrity furnishings. The week I happen to be there, one paper is telling us all about Daniel Libeskind's addition to the Victoria and Albert Museum in London. The other presents the runner-up proposal in a competition to expand the Prado Museum in Madrid. Both proposals are seen as proper subjects for general public debate, as much so as, say, the question of abortion in the U.S.

It's hard to imagine an American politician staking his claim to immortality on a legacy of architecture, as François Mitterand did in France.

Or take Vienna. Another of my interlocutors says, "We'll go to Vienna, do a housing project, and it's in six papers, two radio interviews, TV. The cab driver says to me, 'Did you hear, there's a project at the edge of town, the first one with architects from outside the country?' " That's the popular press. There's also the professional press. In the U.S., it is—we are—mealy mouthed, at least compared to what you read abroad. It took me only five minutes of idly leafing through British publications to put together the following little garden of vituperative quotations. "For the average user or passerby, at least in England, any new building is likely to be at best a disappointment and at worst a monstrous affront." "Charles Jencks is a kindly, charming, often intentionally funny man." (You have to love "often intentionally funny.") "Peter Eisenman heads for the hills again, to the renewed thunder of a thousand word-processors."

Last summer, the Harvard Graduate School of Design devoted an issue of its magazine to the topic of American design publishing. Nobody thought very highly of the category. Typical was Alan Balfour, the British-born dean of Rensselaer Polytechnic Institute, who wrote: "U.S. design publishing, particularly in architecture, may be the weakest in the developed world. This is not, in my view, the fault of the publishers, but a result of a dramatic decline in interest in architecture as a significant element in a broad culture." Balfour did, incidentally, draw a distinction between the strength of European journalism and the weakness of Asian journalism: "Asia has no tradition of critical discourse but revels in spectacular picture presentations." We can all probably agree that you aren't going to get bold architecture without a lively discourse in the press. Why does the press seem more vital in other countries?

Architecture broadcasts social and political messages

Politics, for one thing. Architecture is perceived as an important expression of politics. The argument in Berlin is all about politics—

about whether the new architecture and urbanism looks too Fascist, or too American, or too whatever. "Architecture in Europe has always been very strongly associated with politics," notes one architect. "Communist mayors hire Communist architects. Christian Democrats hire Christian Democrats. Architecture has a real tie with political aspiration." One result can be coziness and corruption, of course. Nevertheless, it's important to notice the value of the fact that at least architecture means something. It broadcasts social and political messages. The messages generate passion, generate debate. People start to care. The architecture gets bolder, more confident. It knows it has something important to tell us. It's hard to imagine an American politician staking his claim to immortality on a legacy of architecture, as François Mitterand did in France.

A Senate subcommittee attacked Pei Cobb Freed and Partners for seeking to create "an architectural masterwork" with their design of the Boston Federal Courthouse. "How is any kind of public architecture supposed to thrive in a world in which you get your knuckles rapped for trying to be 'above-standard?'" the author asks.

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Sometimes, architecture's political meaning is simply that it's telling us how big and strong a country is. U.S. architecture used to do that. Now Asian does. "In Asia, if they hire good architects, it's for flash and prestige," one friend commented. "In East Asia there's not that much that's exciting. It's Chicago and New York City redux, as they were in the 1920s and 1930s. It's all about real estate and status. It's much worse than what we did. There are not a lot of important civic buildings built in East Asia except in Japan, where architecture plays a very large role, where they have a long tradition of caring how things look and feel." "Undoubtedly," echoed another commentator, "Asia's enthusiasm for architecture is due to its ability to serve as a recognizable symbol of progress and wealth."

The schools are rising from their long, blissful immersion in the warm bath of arcane theorizing.

Crass, maybe. But when did Americans last perceive architecture as being a recognizable symbol of anything that mattered to them? You'd probably have to go back to the arrival of Modernism in the 1950s and 1960s. That was a turn-on for the press, for example in the flamboyant work of an architect like Eero Saarinen. Today the buzz is lacking. "In the U.S., perhaps the culture at large is simply uninterested in the [illegible] of the profession's most influential figures, and bored by the others," is one comment. In the past architecture was often a means to status. You got status by building expressively. Usually you did that by reference either to the past or the future. You demonstrated your aristocracy by building a [illegible] mansion, or you displayed your cool by building something avant-garde. Either way, you gained status. Today, perhaps, we're more likely to measure our status by other means: by our possessions, by our choice of neighborhoods certainly, but seldom by our creative use of architecture.

There are other reasons why architecture, and the public discourse about architecture, seems nearer the center of culture in other countries. For one thing, people grow up surrounded by architecture, in cities built over a thousand years. They can't help noticing it. And, the environment gives them a lot of venues to get together and argue, places like cafes and taverns. As well, there's the manner in which architects get selected. Which brings us to competitions.

Competitions give the young and unheralded a chance

In Europe especially, an enormous slice of the market for architectural services is awarded by competition. In the case of public work—of which there's a great deal more in any case—competitions are often required by law. If a competition is a big public one, like that for the Prado, it generates a sporting interest, rather like that of a political election. Competitions are very rare in the United States, so we lose that chance to get people interested in architecture. And, of course, any kind of competition offers an opportunity for a young and unheralded architect to break through to a big commission. "Young architects in Europe literally start their first serious commissions at 30 years old," says an American in his early 50s who's just starting to get major work. "By way of contrast, an American friend of mine—an avant-garde architect whose name is familiar to everyone who knows anything about architecture—is now getting teased by his European friends, because he just got his first elevator building at the age of 53." Because U.S. commissions tend not to be awarded by competition, they're likely to go to old, safe, established firms. "U.S. firms have gone corporate," says the same architect. "The smaller, personal firm, what I have here, is one of the last. The way work is given out favors the corporate firm." Like any living culture, the culture of architecture needs regular infusions of youth at an influential level. Speaking of youth brings up the topic of education. As usual, my colleagues were nothing if not outspoken. An architecture school dean: "Our high school students are lazy and ill prepared." An architect: "In American schools, except elite East Coast private schools, there is no interest in any artistic activity. It's all marginalized." The view is that there's been a general dumbing down, especially at the national level, in recent years. A good example is the incredible attack, by a Senate subcommittee, on the Federal courthouse in Boston by Pei Cobb Freed and Partners. The committee chided the client and the architect for seeking to create "an architectural masterwork." The committee recommended, for example, "regular rather than above-standard ceiling lights." How is any kind of public architecture supposed to thrive in a world in which you get your knuckles rapped for trying to be "above-standard?"

More than anything else, the boldness gap is the result of a loss of faith in the ability of architecture to make a better life.

The flip side of the dumbing down, of course, is the retreat of the academies into monastic seclusion. "Architecture schools have become part of a more formal world of academics, driven by academic concerns in the narrow sense of that term," said a writer and teacher. "They're full of debates. I have nothing against that, but it's turned people away from architecture as a material reality. Architecture comes to be seen not as environment but as poetry or semiotics. Getting published becomes the valued activity. We should be asking, why have the American academies turned in on themselves and left off being politically engaged?"

Our schools are getting better

But at least this is one area where everybody thinks things are getting better rather than worse. The schools are rising from their long, blissful immersion in the warm bath of arcane theorizing. Architecture is again being understood as the art of making actual places.

More than anything else, perhaps, the boldness gap is the result of a loss of faith in the ability of architecture to make a better life. "Here in Vienna"—another U.S. architect is talking—"there is a belief in the transformative role of government and what it can produce." If the current election is any guide, it's clear no such belief exists in the United States. That may be good or bad for the country. Almost certainly, it's bad for architecture. Oddly enough, my colleagues seem to believe active government is good for the quality of public life and architecture, regardless of whether the government in question happens to be liberal or conservative. Says one: "There's a greater commitment to public architecture in places like Finland, Spain, France. There's a social democratic tradition. A respect for public life and investment. In Europe, as much as 80 percent of all housing may be created by the public sector. There is an expectation of value added by architecture. This is especially true on the municipal side." By contrast, another claims: "Public life was the legacy of autocratic history. Autocratic paternalism. Architecture thrives very much better under authority—big gods, big money, big kings. That's all been taken away. I doubt that you can ever recover." Both speakers are saying that what's been lost in the U.S. is a strong sense of public life. And what socialism and monarchism have in common is an interest in creating a public world, even if they do so for very different purposes. Both create public spaces, public monuments. Public architecture. Bold architecture.

On the other hand, as recently as the 1960s, architects in America did get a chance to do public work. It was called urban renewal. "We blew it last time," says an architect. "As a result, we now see fuzzy therapies replacing a belief in science and problem-solving. We see comfy retro-architecture. But if the choice is only going to be between Disney and urban renewal, then there's no choice." I freely admit I've probably overstated the case in almost every paragraph. As all the great architectural propagandists have understood, from Pugin to Le Corbusier to Leon Krier, overstatement is a way of making a point.

I'm not out to knock the U.S., either. As one architect accurately put it, "Don't forget, in other parts of the world, architecture is often the only creative game in town." We still have lots of creative games. America is astonishingly inventive in the cyberworld, in the pop-culture world, in the world of scientific research, in a zillion others. In a very real sense we now create the software for the entire rest of the world—software in the largest sense, software as the invention of culture. But except maybe for Boeing, we seldom make the world's hardware any more. And architecture belongs to the physical world. It's hardware. It's time-specific, place-specific. Maybe we've temporarily lost interest.

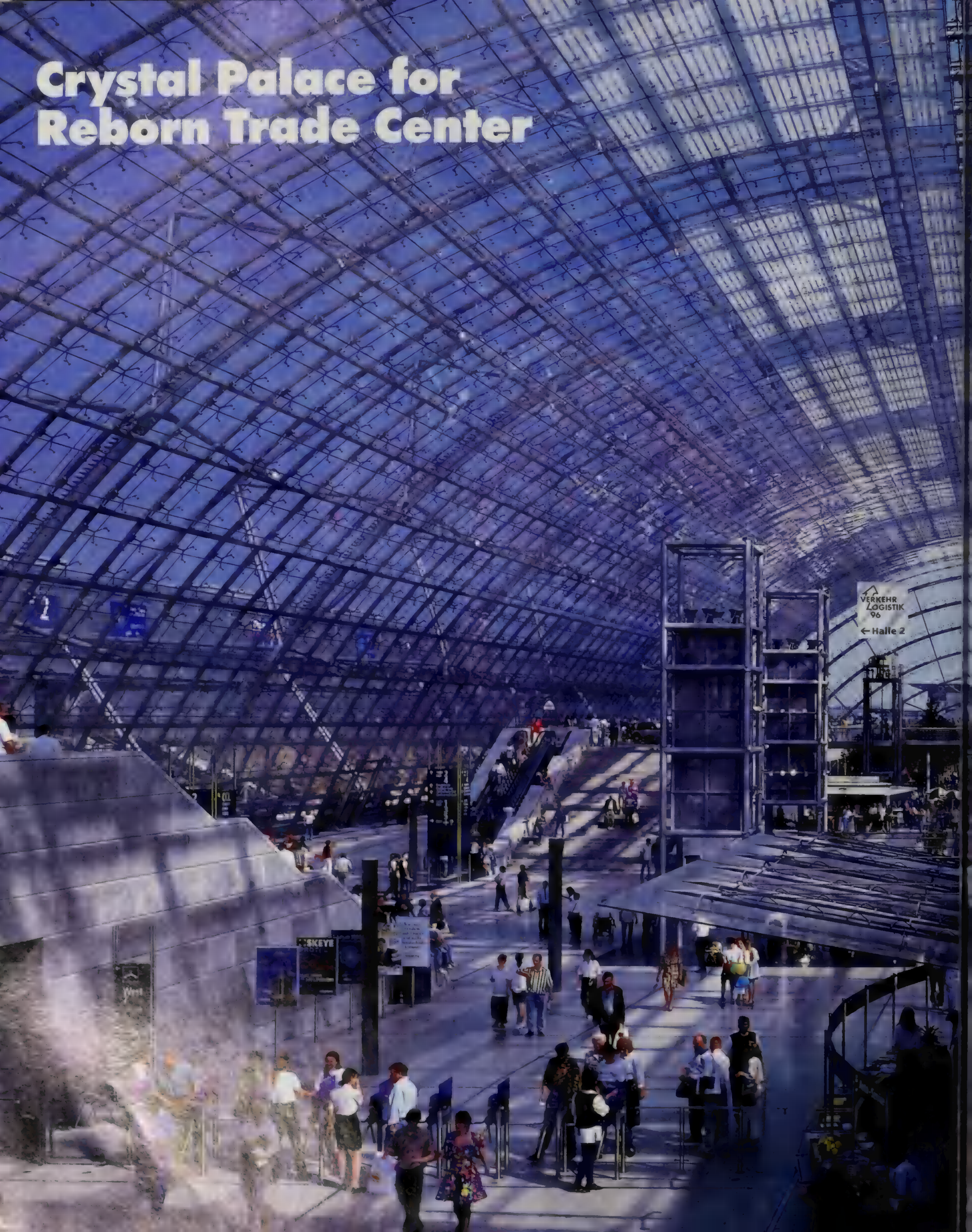
Except maybe for Boeing, Americans seldom make the world's hardware anymore. And architecture is hardware. It's time-specific, place-specific.

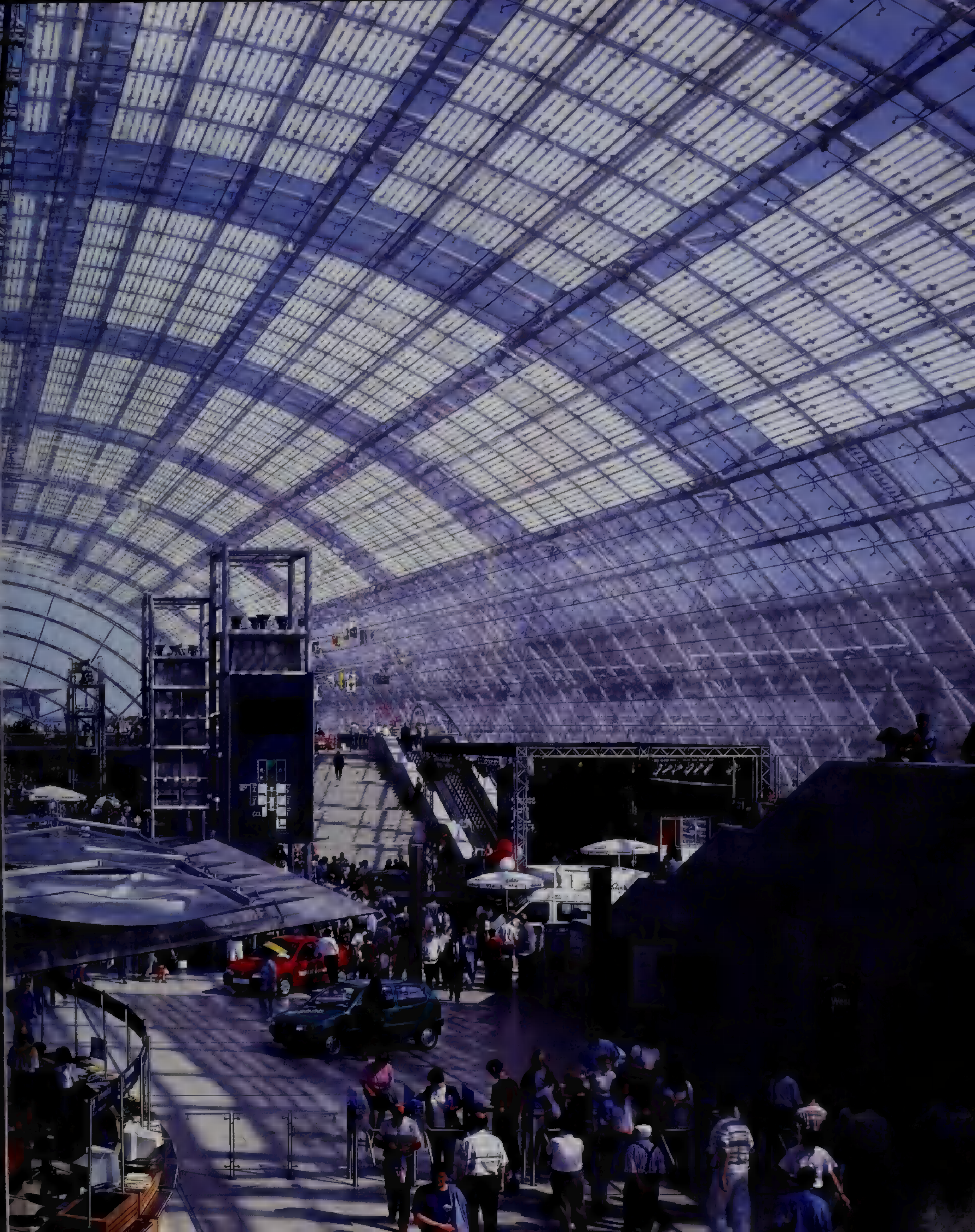
What's needed is a national argument. An angry, noisy, impertinent, informed, caring, responsible argument. The kind you hear in those other countries. An argument that isn't afraid to talk about politics or money, or about idiots in Senate subcommittees.

We need to regenerate a debate—in the academy, in the newspapers, in the streets—about what our public life should be. And about the important role architecture and urban design should play in creating that public life. It's the responsibility of publications, above all, to trumpet the truth that architecture is important to people. That it matters. That by structuring the world we inhabit, it either helps or impedes everything we wish to accomplish. When we get that debate raging, I don't think we'll be looking to the rest of the world for bold, inventive architecture. ■

If you have something angry, noisy, impertinent, informed, caring, and/or responsible to add to the argument, fax 212/512-4256 or E-mail: dewittc@mcgraw-hill.com.

Crystal Palace for Reborn Trade Center





The bravura technology that greets visitors to a new convention center signals the transformation of this revitalizing city in former East Germany.

By Mary Pepchinski

Approaching Leipzig from the autobahn or the train, a slender tower of pipes and tension rods, two lines of low-slung pavilions clad in a lattice of glass louvers, and a vault of glass supported by a filagree of arches rise above the garish commercial sprawl emblematic of unified Germany. This is the Neue Messe Leipzig, which not only signals a transformation of the formerly state-owned Messe Gesellschaft (Convention and Trade Fair Corporation), it provides a striking new symbol for this city's post-Communist revitalization.

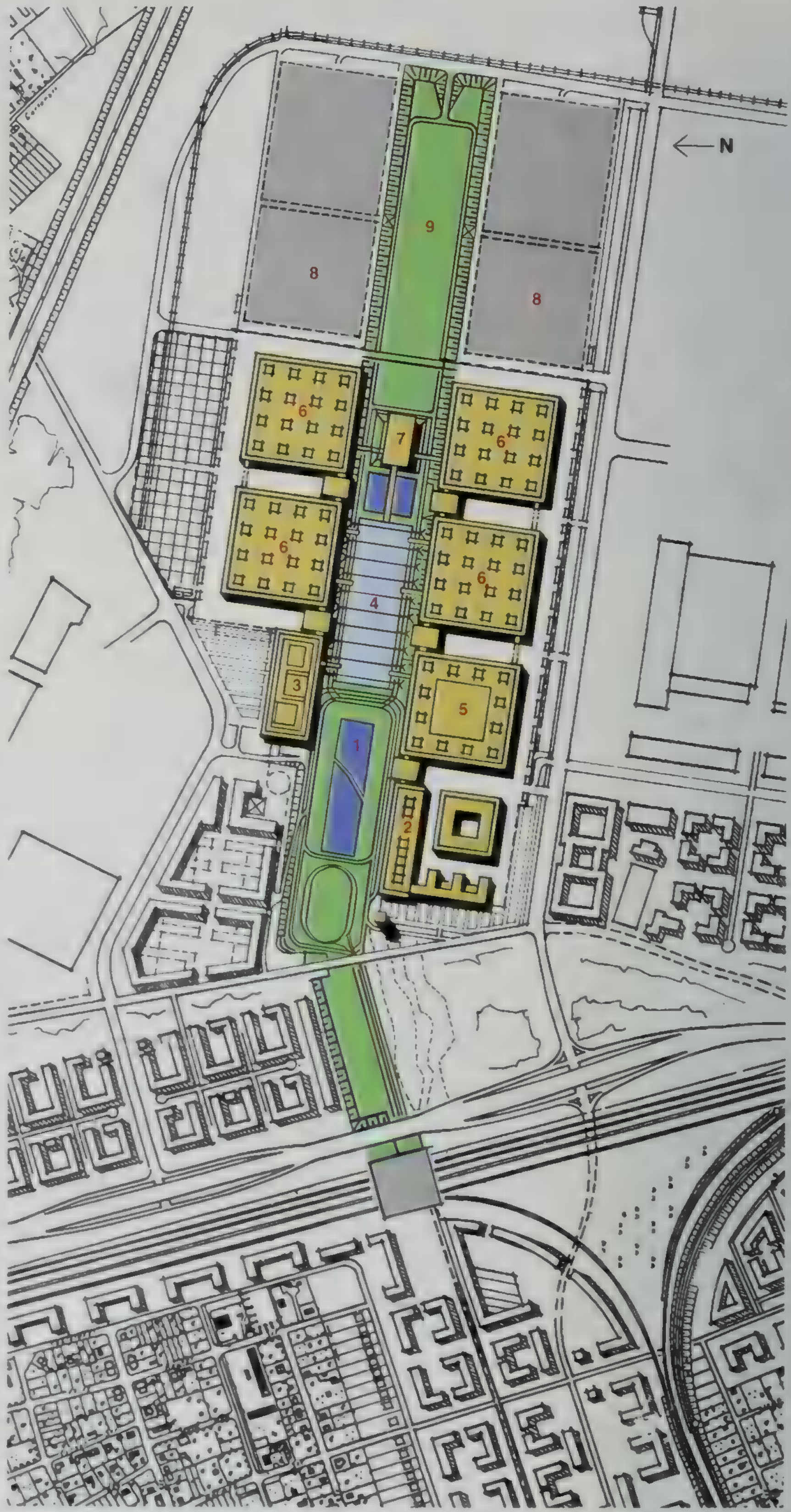
Leipzig has sponsored trade fairs since the Middle Ages. After 1989, the Messe's continued viability was deemed crucial to the city's renewal. However, Leipzig's existing fairgrounds proved to be poorly accessible, and were outdated compared to similar facilities in former West Germany. Thus, the re-privatized Messe's management—owned by the City of Leipzig and the Federal State of Saxony—decided in 1991 to construct a vast new 272,300 sq m (about 2.9 million sq ft) complex to hold trade fairs and conventions.

First, a location on the city's northern periphery, near surface transportation and a 20-minute drive from Leipzig's center, was acquired. A DM 300 million (US $200 million) gift was obtained from the Federal Finance Ministry's "Recovery East" program to secure financing. An invited competition was organized, drawing entries from Rem Koolhaas, Richard Rogers, and Günther Behnisch, among the 15 participants, with von Gerkan Marg and Partner (GMP) emerging as winner in April, 1992. The foundation ceremony was held in August, 1993; fast-track construction took 28 months, and the center began operating in April, 1996. The final cost, including building, equipment, site work, and most project expenses was DM 1.3 billion (US $999 million).

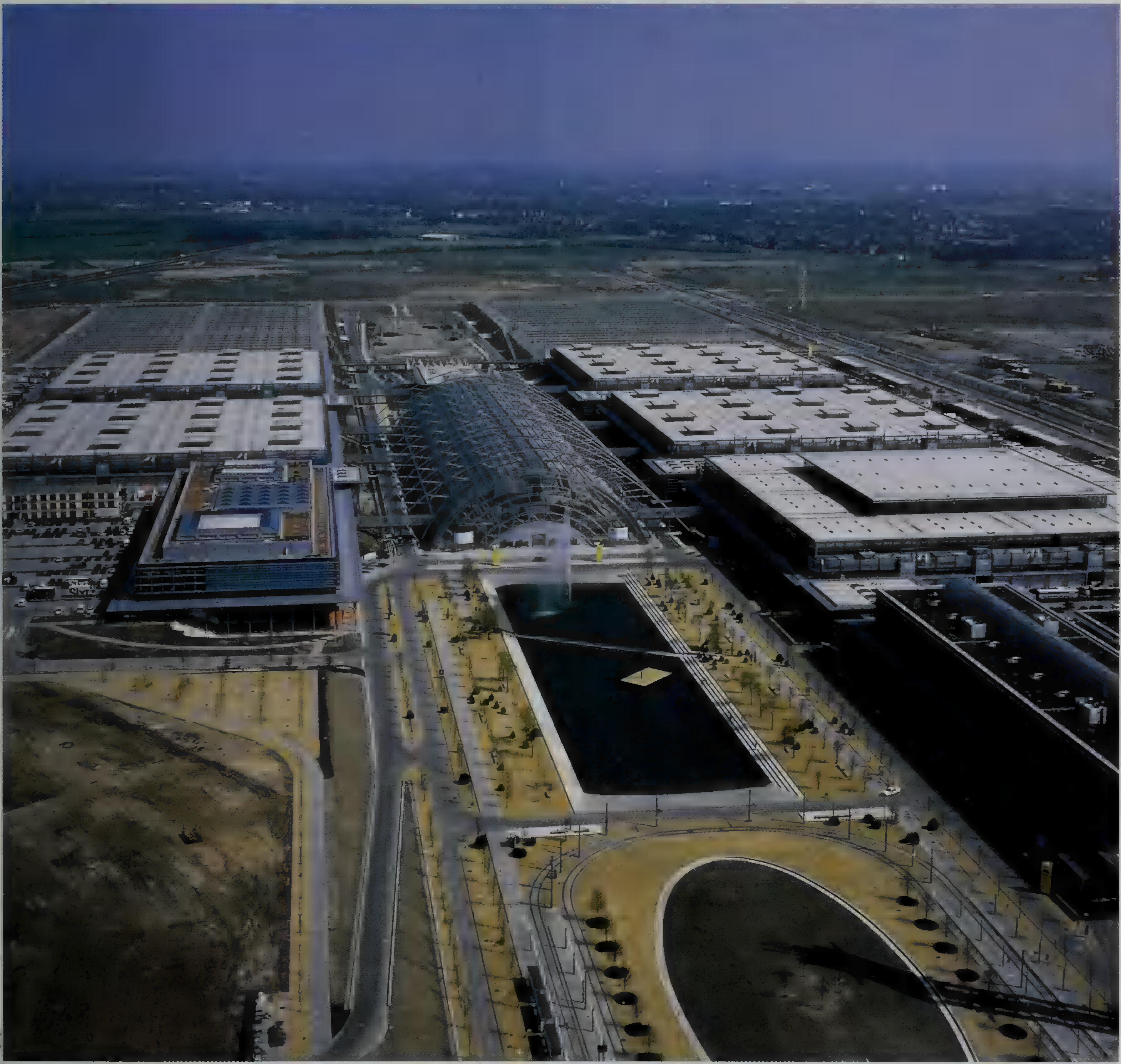
GMP's scheme won not only because it tightly organized the sprawling program, but because of the park-like setting it creates. GMP formed a landscaped axial valley, oriented west-east, which funnels transportation into the grounds from the west, locates a spectacular Glass Hall in its center, and ends in landscaped parking. Unlike American all-under-one-roof convention centers, the Neue Messe is divided into pavilions, accommodating several small gatherings or one large convention. Two service roads flank the valley and pass between the Glass Hall and the raised pavilions. The Glass Hall not only functions as symbolic entrance and meeting place, it links the other three structures that form the Messe (site plan, right, and aerial view, opposite): the east entry pavilion; the south wing, housing two exhibition halls, a multi-purpose hall (each 20,500 sq m), restaurants and offices; and the north wing, containing two more halls and a congress center.

The Neue Messe offers a spectacular alternative to the blank-wall monoliths typical of convention centers. Indeed, attendance has dramatically increased, reports Messe management. For Leipzigers used to the crumbling old buildings of the city center and anxious about market-driven Western sprawl at the urban periphery, it has become a vital public place. They join guided tours, attend public events, or simply stroll, bicycle, or skateboard through the site. It is one of the few successes of the building boom in former East Germany.

Mary Pepchinski teaches and pr[illegible] in Berlin.



1. *West entrance and pond*
2. *Administration*
3. *Congress center*
4. *Glass Hall*
5. *Multi-purpose*
6. *Exhibition*
7. *East entry pavilion*
8. *Parking/future expansion*
9. *Park*



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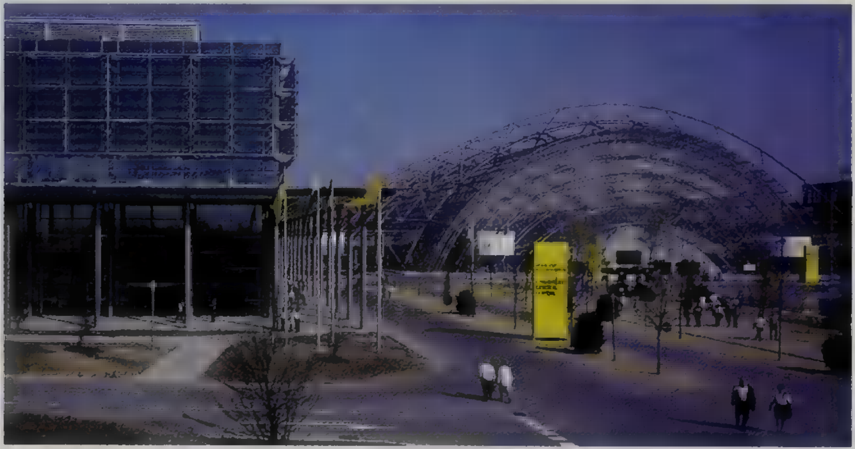
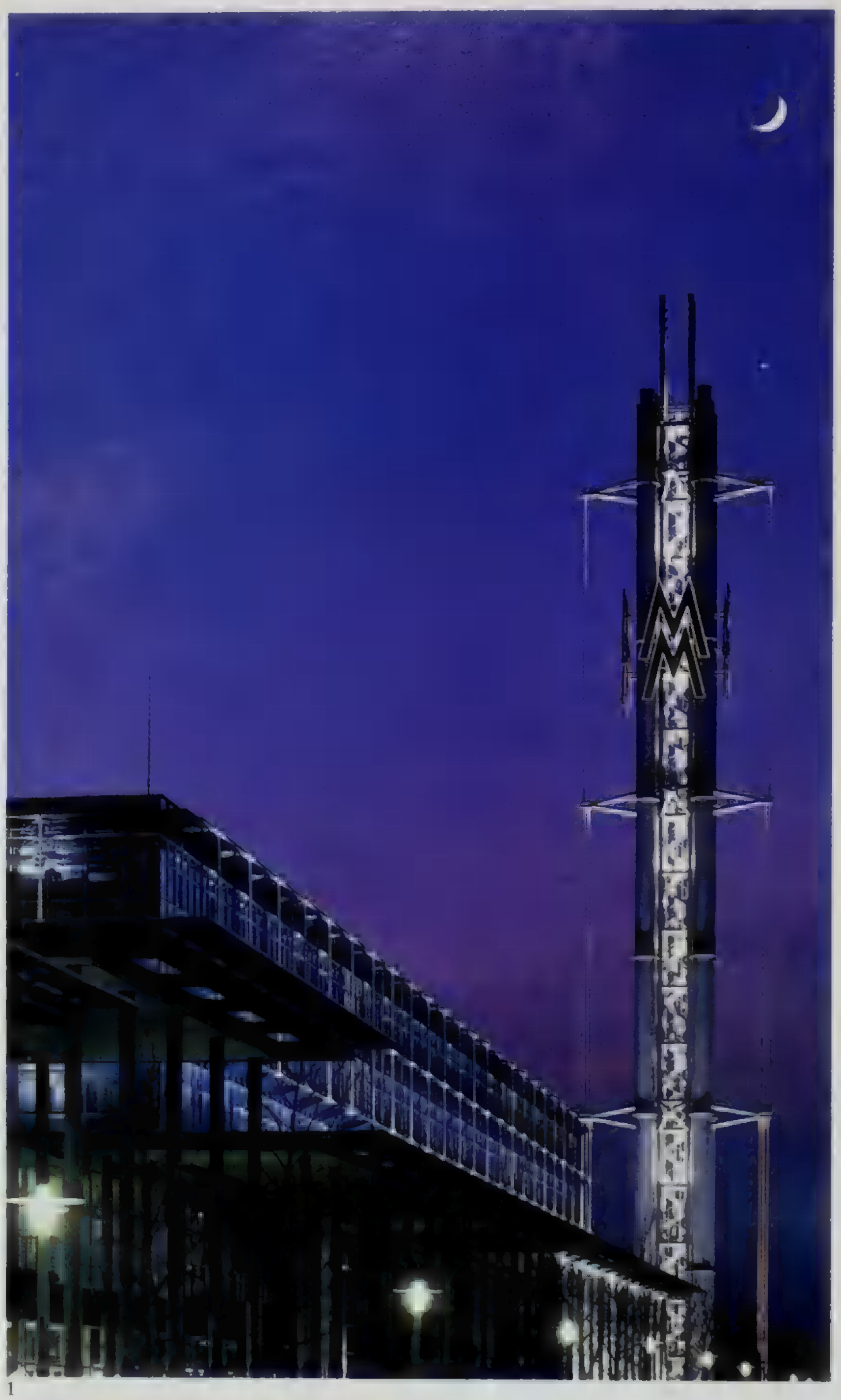
The architect created a shallow, linear valley to organize the site within the chaotic edge of Leipzig (above and site plan opposite). It incorporates planting and landscape elements, such as fountains (view from west above) and it funnels autos and trams into the forecourt at the spectacular vaulted Glass Hall (right). When the Messe is eventually extended, a second glass hall and park will complete the axis to the east.





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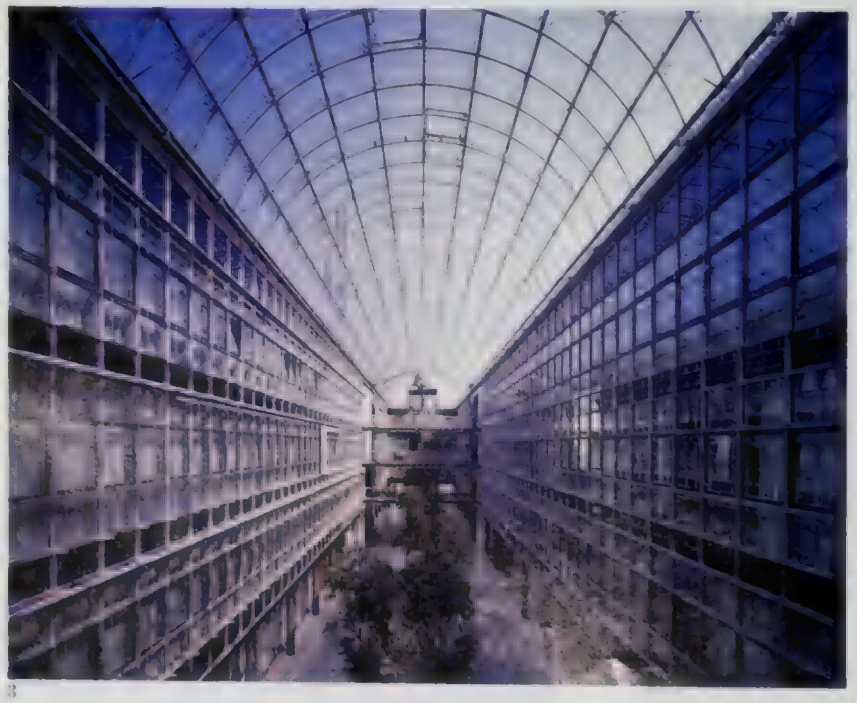

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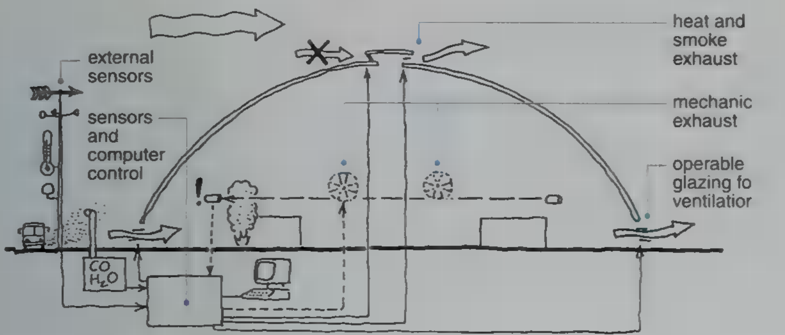
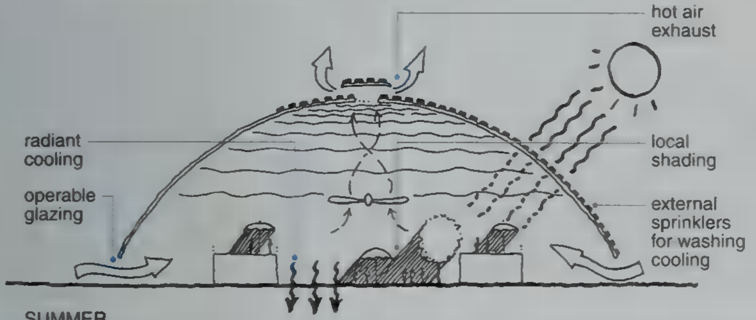
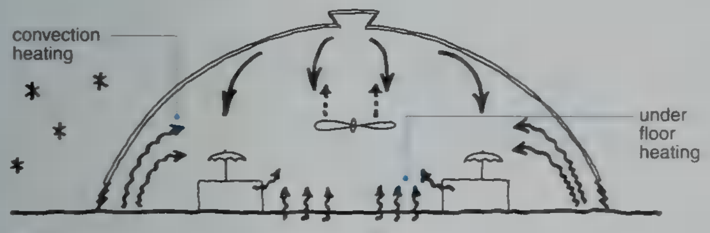


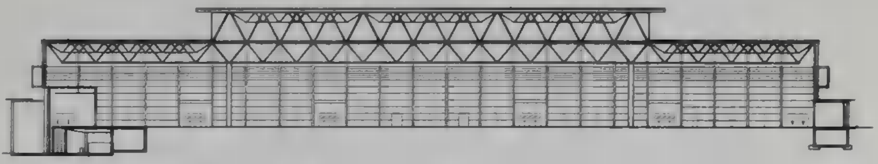
ENVIRONMENTAL CONTROL



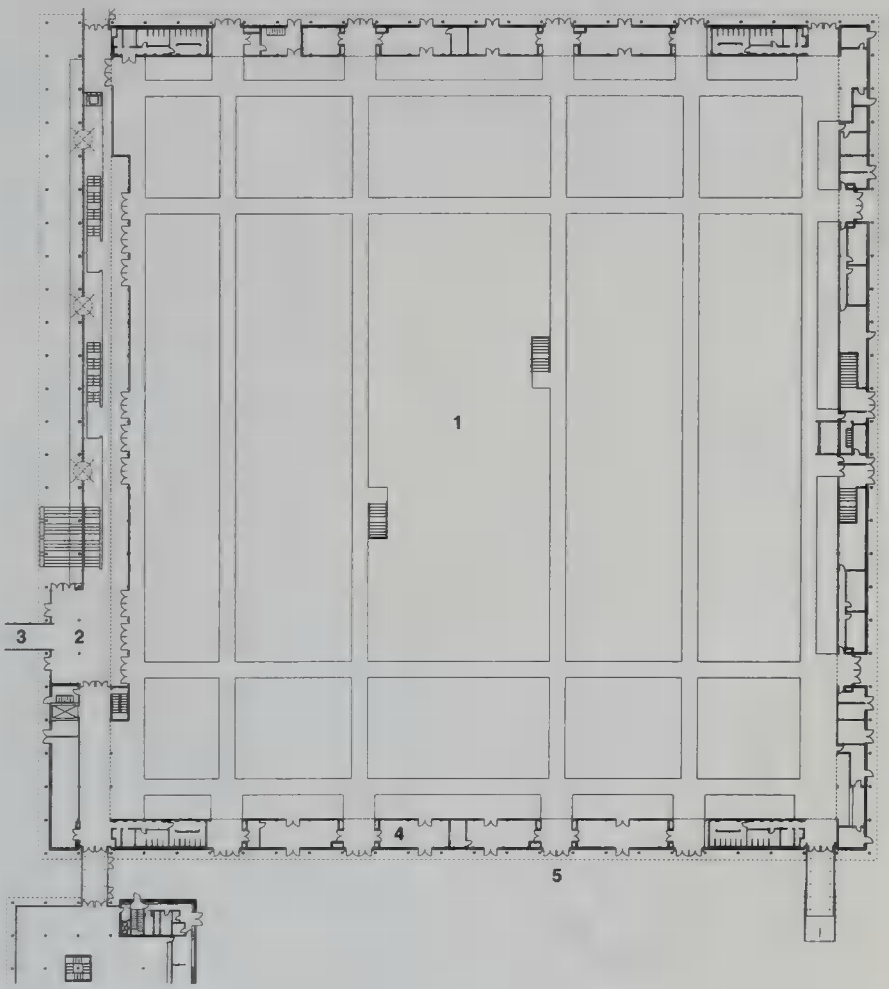
SUMMER



WINTER



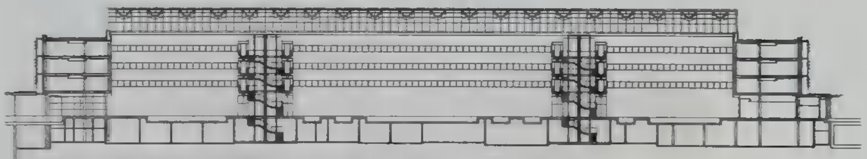
MULTI-PURPOSE HALL SECTION



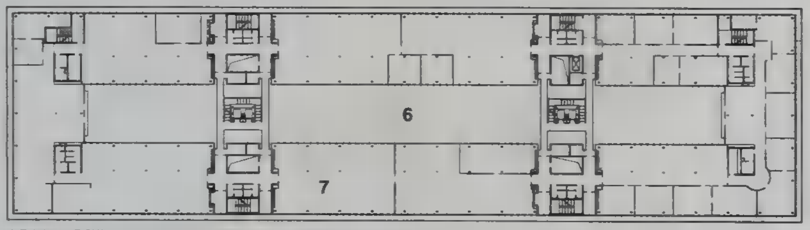
MULTI-PURPOSE HALL

←N

1. Hall
2. Lobby
3. Bridge to Glass Hall
4. Services
5. Truck access
6. Atrium
7. Offices



ADMINISTRATIVE BUILDING ATRIUM / LONGITUDINAL SECTION



ADMINISTRATIVE BUILDING / SECOND FLOOR

Glass and steel bring form to light and air: *According to project partner Volkwin Marg, light was "used as a chance for architectural staging" throughout the design. Night lighting (1) picks out the historic "MM" logo and cable outriggers that help the 80m-high sign tower resist lateral loads.*

Glass-bladed louvers mediate solar glare at office areas (2). The skylight in the atrium of the administration building (3, plan and section right) is framed from within by welded steel tubes stiffened by a nearly invisible truss of tension rods.

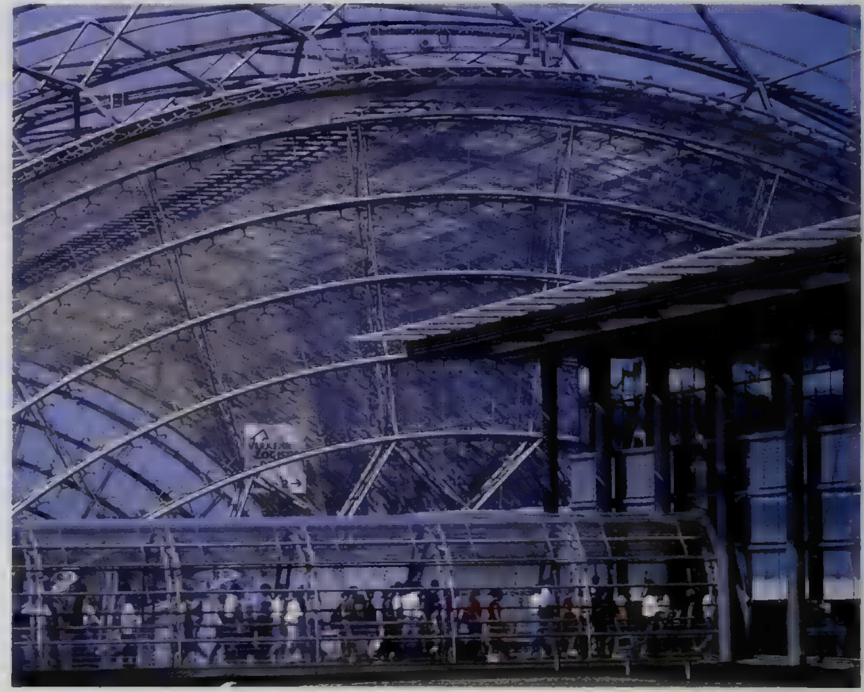
Though exhibitors often prefer "black box" spaces (4), panels within clerestories centered over bays can be opened to admit natural light (section top right). The multi-purpose space (top plan) is divisible and has retractable bleachers. Exhibition pavilions are otherwise similar.

The Glass Hall's potential for excessive glare and heat gain was inventively considered (top diagram, above). Smoke and ventilation systems are computer controlled. Operable glazing at the top of the vault exhausts hot air while low-level louvers draw in cooler air for summer natural ventilation (middle diagram). Local shading is also added, and sprinklers mounted in the external structure can spray water on the glass, assisting cooling without mechanical air conditioning. Radiant cooling in the floor lowers the temperature at the occupied stratum. In winter, the Hall is regarded as a vestibule to be only minimally radiantly heated (bottom diagram).

Melding distinct construction cultures: *To build the ambitious Messe shortly after unification, construction contracts were allotted mainly to German companies; they then subcontracted work to European and Turkish firms. Such a multi-national work force is typical of building projects today. The project was run akin to American fast-track delivery. With construction underway early, the architects and their collaborators needed to "exert discipline on their choices," observed Hubert Nienhoff, GMP's project manager. They selected a modest palette of neutral finishes readily obtainable in the large quantities needed: grey-finished structural steel; unpainted concrete; solid maple or maple veneer for stairs, doors, and handrails; limestone paving. While Westerners have criticized East German construction quality, Nienhoff was pleased to find the local craft skills "first class" and subcontractors more "inventive" than former West Germans.*

*After GMP won the competition for the Neue Messe in 1992, they invited London-based Ian Ritchie to design the central Glass Hall. His scheme saved money because it reduced the internal volume by suspending the glass vault within the structure rather than vice versa. And it offered fewer internal impediments. Esthetically, it created a transparent rather than reflective surface both inside and out. The east entrance pavilion fronts the Hall (**5**); a stabilizing truss crosses a service road, (**6**).*

*In the West, much of the metal structure might have been shop-assembled. In Leipzig skilled labor was able to bolt it together economically on site. Because local building officials had little experience evaluating the technologies used for the Hall, mockups were tested of its structure, glazing, and smoke-exhaust system. Officials still insisted on protective metal mesh under the curved laminated glass of connecting bridges (**7**), but the mesh adds sun control.*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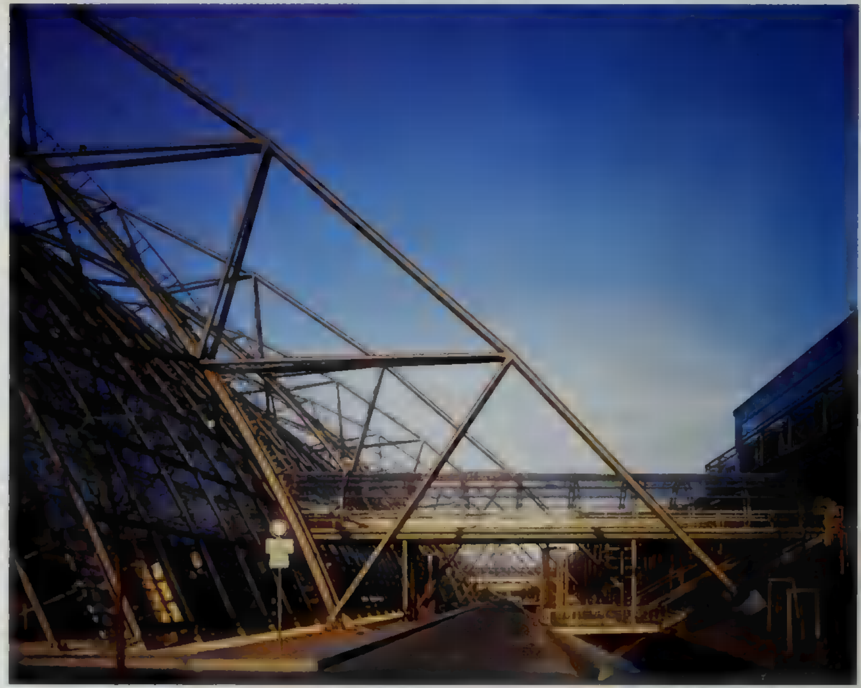
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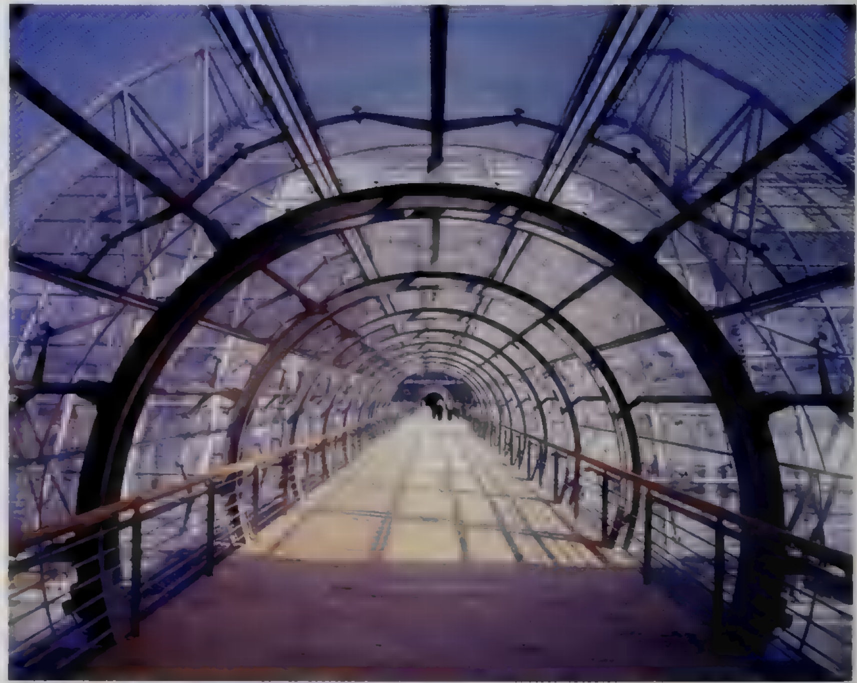
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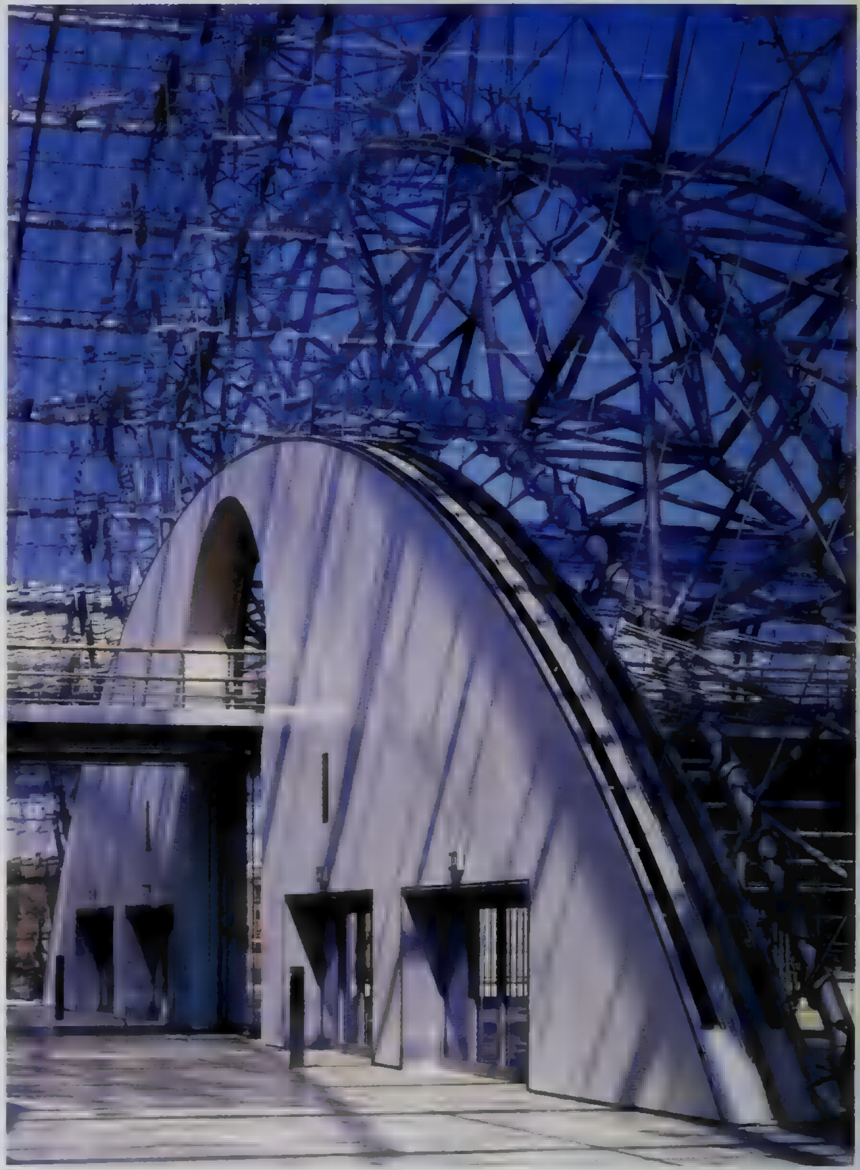
A 1990's Crystal Palace

At Volkwin Marg's request, Ian Ritchie detailed the Glass Hall to evoke an updated version of the great metal-and-glass exhibition halls of the 19th century. Ritchie developed a system in which the structural hierarchy is expressed (drawing opposite). The outer primary trusses, as blade-like in cross-section as possible, according to Ritchie, are spaced at 25m centers, creating a structural rhythm similar to that of Leipzig's landmark main train station of 1912—another inspiration for Marg. Their purpose is only to stabilize the vaulting, metal-tube grid. Metal armatures attached to the grid actually suspend the through-bolt fittings that hold the glazing in place (9 and details below). To maintain visual clarity, variable loads are handled by varying the thickness of the tube walls, which are identical in outer dimension. Although the structure was bolted together on site, most of the connections are concealed.

The glass was selected specifically for its transparency, though some areas were fired with ceramic frit to reduce solar gain. Each tempered, laminated-glass panel is about 5 ft by 10 ft. Special silicone extrusions join and seal the panels. These joints take up anticipated deflections from snow or wind that are not parallel to the plane of the glass as well as dimension changes due to temperature fluctuations. The glass fittings take up much of the in-plane deflections caused by wind or snow loads. They can rotate one or two degrees where they attach to the support arm. And the fittings themselves contain a spherical bearing at the plane of the glass that eliminates transfer of bending stresses from the support structure.

The end walls of the Glass Hall are structurally separate to avoid conveying lateral loads to the roof's supporting grid. External arches (**11**, opposite) support the end-wall glazing (interior view, **10**). The simplicity of the curving glazed interior (pages **80-81**) belies some underlying complexity. At midpoints between corners of glass panel joints, special fittings have been inserted that allow the external tubular grid to support ceiling-hung exhibition items. Uplighting is set in the floor (as is radiant heating and cooling and supply air), though external lighting on the grid adds sparkle. Low-level speakers located in the bridges and mezzanines overcome the naturally reverberant acoustics. Glazed louvers at the high point of the roof and at the base open for natural ventilation; counterweighted upward-sliding glazed sections open automatically in an emergency for exit.

Credits
Neue Messe Leipzig
Leipzig, Germany
Owner: *Leipziger Messegesellschaft mbH*
Architect: *von Gerkan, Marg and Partner—Volkwin Marg, partner-in-charge; Hubert Nienhoff, Kemal Akay, project managers*
Engineers: *Polonyi + Partner, H. Haringer (building structural); Schlaich, Bergermann + Partner (sign tower); Obermeyer Albis-Bauplan, RWTH (civil)*
Consultants: *Ian Ritchie Architects (Glass Hall glazing); Wehrberg, Eppinger, Schmidtke (landscape); PBI, Klaus Glass, Wronn Engineers (facade); von Rekowski-Wolff (insulation, humidity control)*
Project Manager: *Ingenieurbüro Rauch and Wiese*



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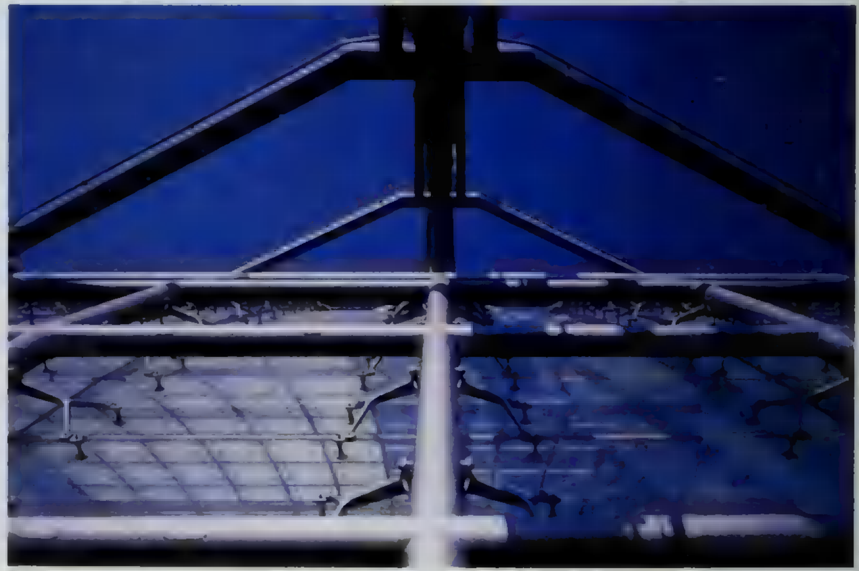

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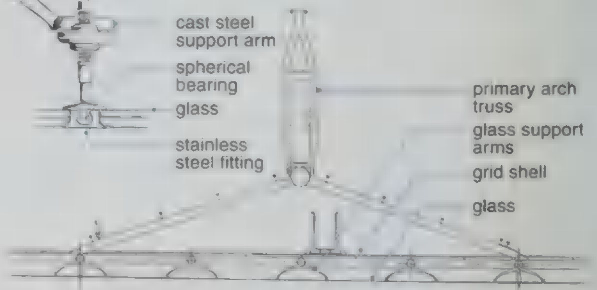

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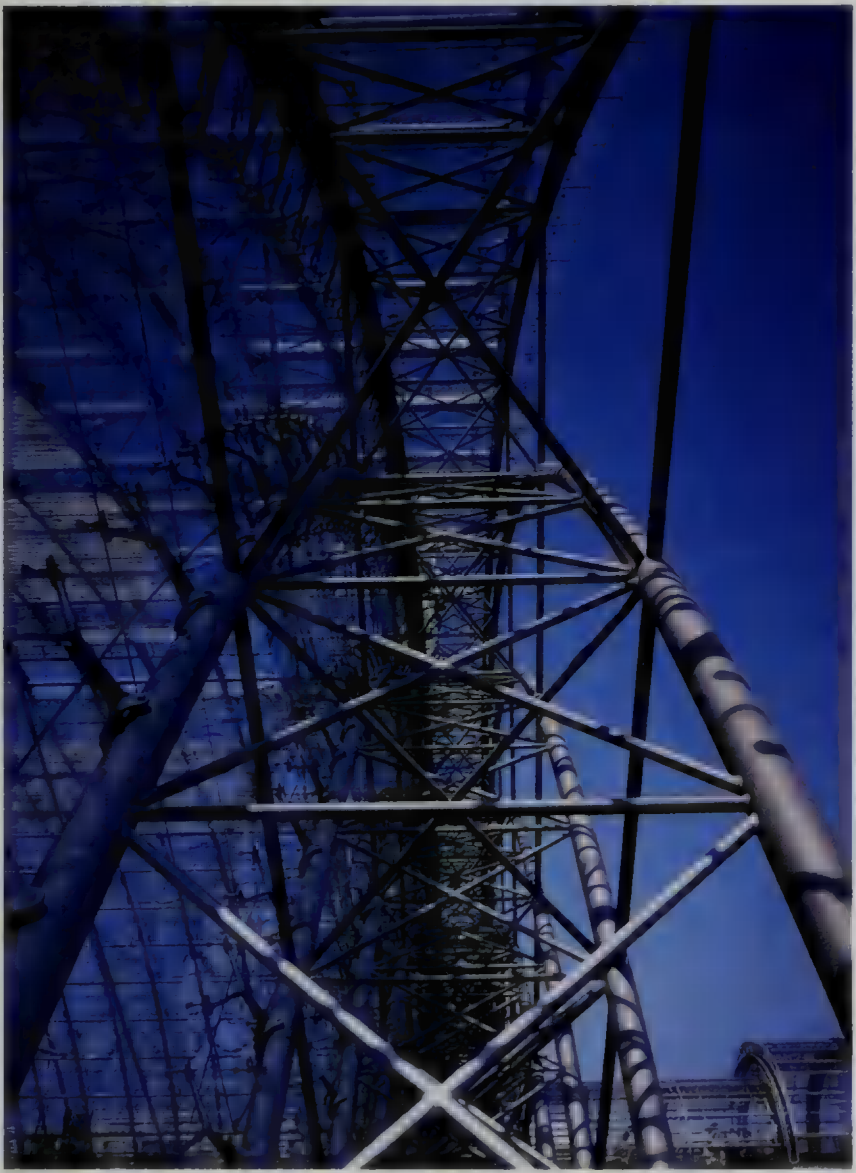
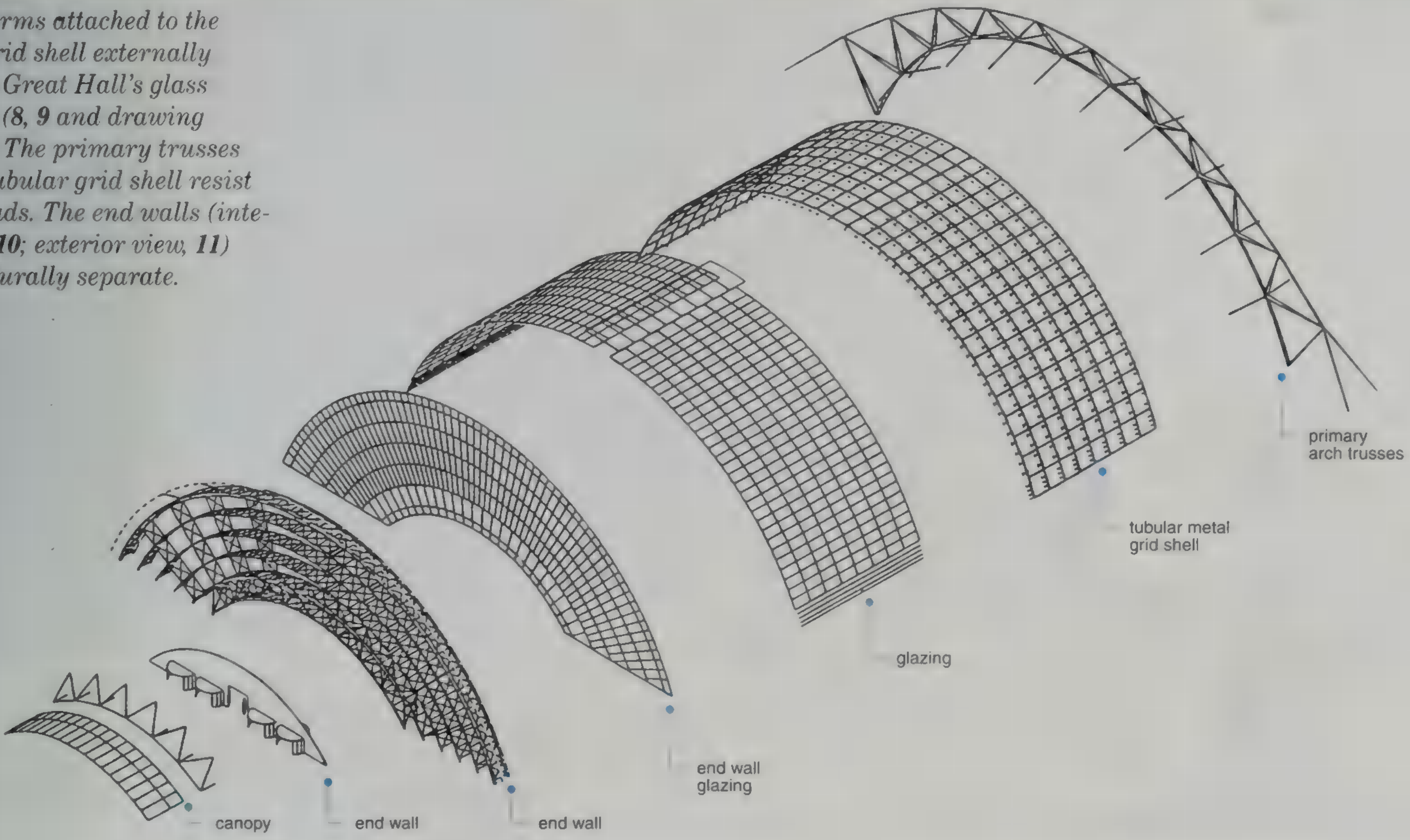


11

*Support arms attached to the tubular grid shell externally fasten the Great Hall's glass enclosure (**8**, **9** and drawing opposite). The primary trusses help the tubular grid shell resist lateral loads. The end walls (interior view,**10**; exterior view, **11**) are structurally separate.*



A True Community College

Under an oversized roof, Miller/Hull gathered together the ingenuity of a small timber town to create a bold new satellite college.

By Sheri Olson

Olympic College Shelton
Shelton, Washington
The Miller/Hull Partnership, Architect

Only through donations of cedar siding and glu-lam beams from one timber company, a free wooded 27-acre site from another company, and services from several local businesses, was the western Washington town of Shelton able to build a much-needed community college. Of the $1.4-million construction budget, $500,000 was raised by the town and matched by Olympic College, while the balance came from donations of services and products. The challenge for the Miller/Hull Partnership was to weave these disparate resources together into a coherent whole. "It was more difficult—impacting material selection, bidding, and construction sequencing—but ultimately more rewarding," recalls project architect Scott Wolf. Miller/Hull used its talent for freshly interpreting regional style and transformed the modest project into a dynamic building that plays a large community role.

"Economy was key in the development of a masterplan," says principal Robert Hull. Budget and environmental concerns determined the buildings' locations and their compact footprints. The site's natural features—heavy timberland and a steep hill—were used to maximum advantage. Located on a flat swath, the long, narrow form of phase I cuts the site, organizing it in one simple step. To the north, a bio-filtration swale treats run-off from the parking lot and creates a formal landscape buffer between building and cars. On the south, an informal campus "quadrangle" is made by the building, hill, and woods.

"The roof is the big move for the building; it implies shelter as well as rain protection," explains Hull. While the limited budget dictated a modest form, the oversized roof gives the project a larger presence than its 8,000 sq ft. The roof culminates in a dramatic double-height covered entry. It will provide a transition from phase I's smaller scale to the two-story volume planned for phase II. "We were trying to avoid a potential 'Mutt-and-Jeff' situation," says Wolf. Along the quad on the south side of the building, the roof overhangs 14 ft, covering exterior circulation. Faculty offices puncture the classroom wall to articulate this elevation and provide a more intimate scale. Over the daycare center at the rear of the building, the roof slopes in the opposite direction, giving it a separate identity. Where the two roofs meet is an oversized scupper, with chains salvaged from a local naval yard hanging down into a welded-steel catch basin below. Rainwater collects, then flows down the chains like a waterfall.

Interior spaces are as compact and flexible as a ship's. "Our goal was to get as much program in as little space as possible," says Hull. Classrooms also accommodate community functions. The main lobby contains offices, the student lounge, and a resource center. At dusk the lobby's large windows, combined with up lighting on the underside of the roof, make the building glow like a camp lantern in the woods.

Sheri Olson is an architect and writer based in Seattle.

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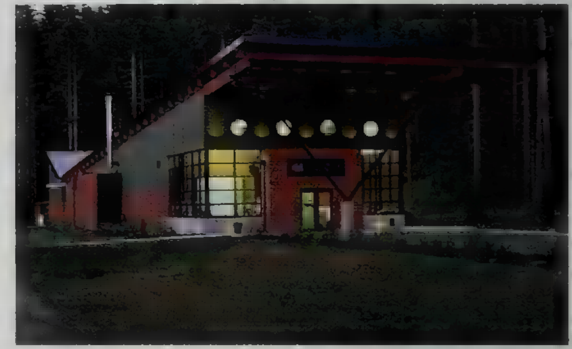
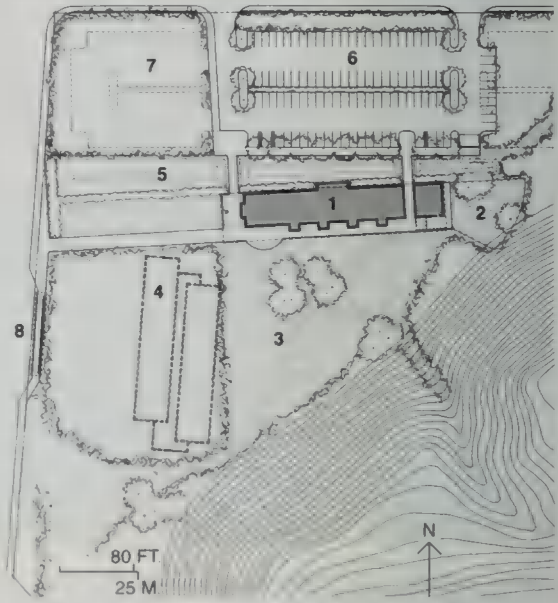
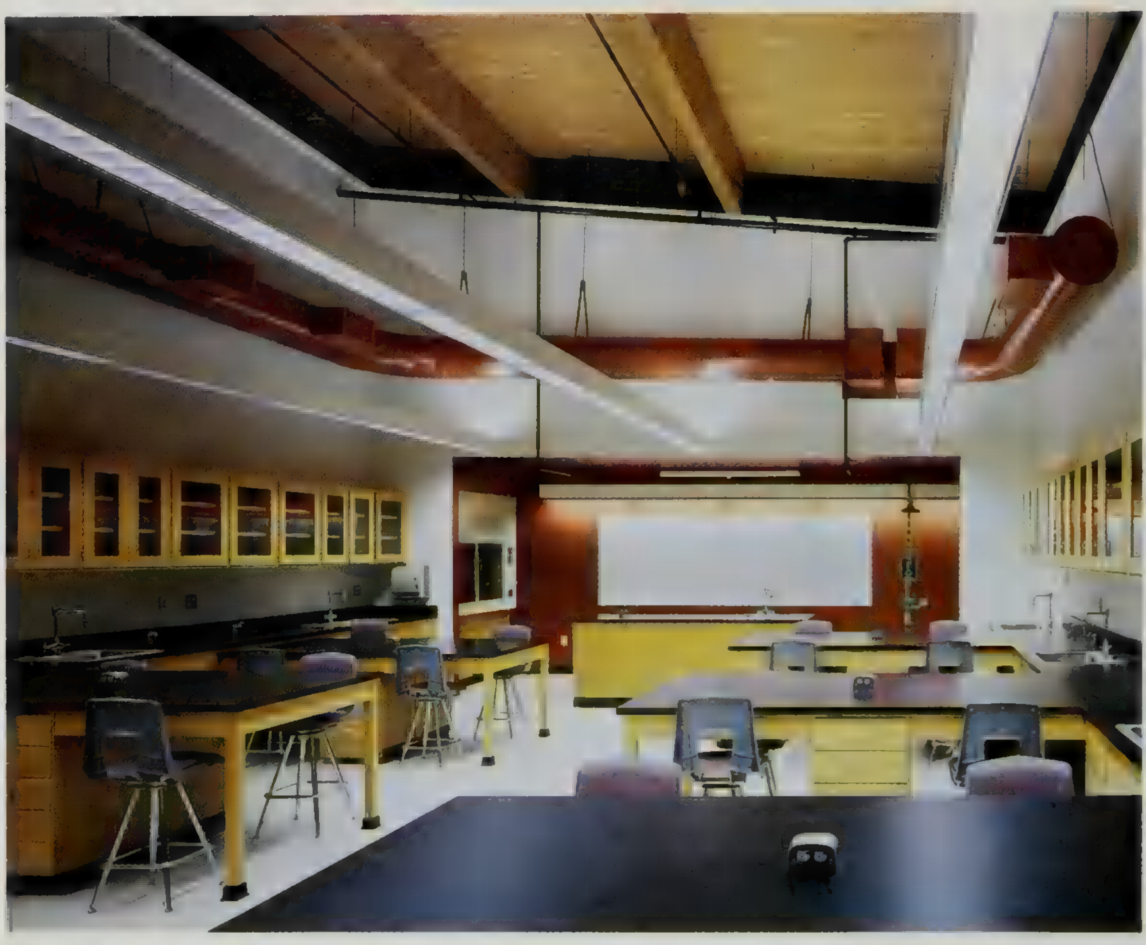
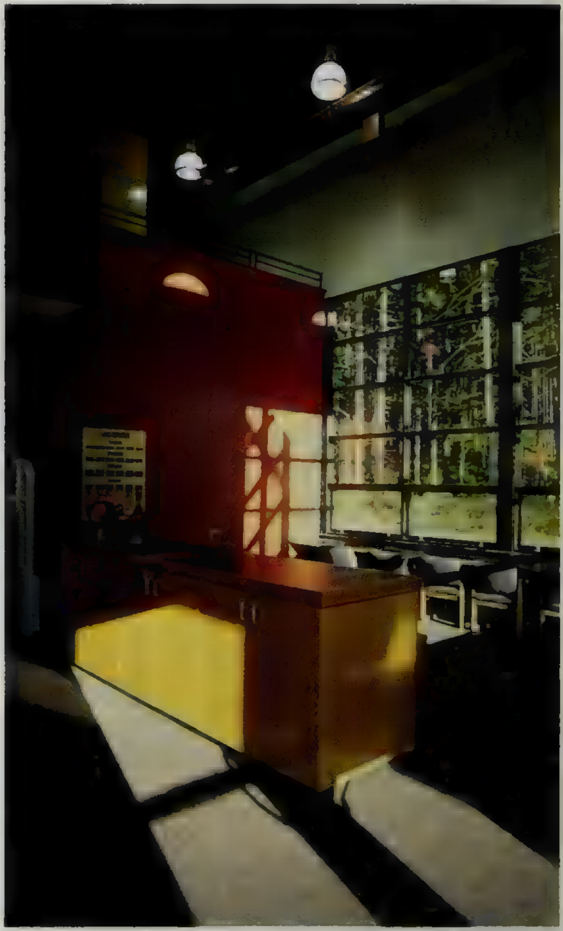


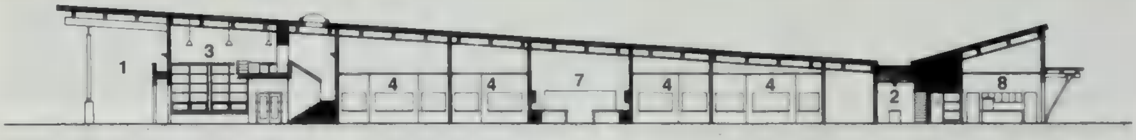


"Conceptually our idea was to create the greatest impact with a limited material palette," says project architect Scott Wolf. Stained horizontal beveled wood siding is at the building's base. Above are manufactured wood panels. Joints between panels are wood battens 4-ft on-center for vertical rhythm. Panel fasteners were left unpainted for added texture.

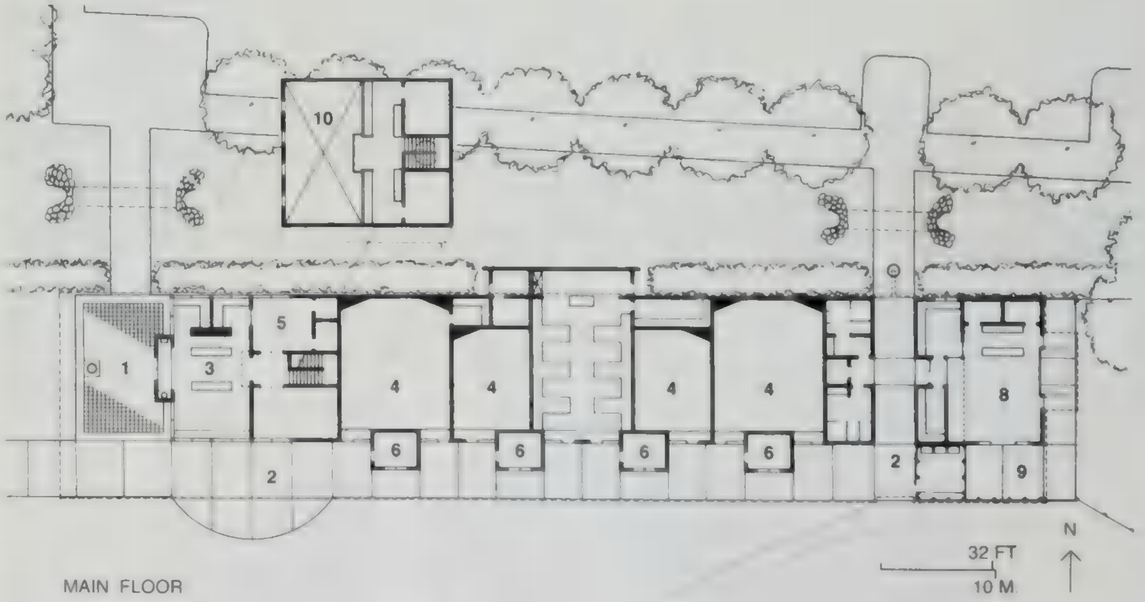
1. *Phase 1 (built)*
2. *Daycare play area*
3. *Park*
4. *Phase 2 (unbuilt)*
5. *Filtration pond*
6. *Parking*
7. *Phase 2 parking*
8. *Public transit stop*







LONGITUDINAL SECTION



MAIN FLOOR

1. *Covered entry*
2. *Covered walkway*
3. *Lobby*
4. *Classroom*
5. *Conference room*
6. *Office*
7. *Laboratory*
8. *Daycare*
9. *Covered play area*
10. *Open to below*
11. *Lounge*

A common theme in Miller/Hull's work is the integration of interior spaces with the extraordinary natural setting of the Northwest. In the daycare center at Shelton College (opposite), a brightly colored overhead door rolls up and out of the way, extending the classroom into the playground. In the lobby (above right), the woods are drawn in through large windows. To minimize glare, daylight is limited in the classrooms and laboratory space (above left).

Credits
Olympic College Shelton
Shelton, Washington
Architect: *Miller/Hull Partnership—Robert Hull, partner-in-charge; Scott Wolf, project architect; Norm Strong, partner-in-charge of quality control; Sian Roberts, Dan Mihalyo, team*
Engineers: *AKB (structural); Greenbusch Group (mechanical); Sparling (electrical); SvR Design Co. (civil)*
Consultants: *SvR Design Co. (landscape); C3MG (costing)*
General Contractor: *Construction Enterprises & Contractors, Inc.*

EXIT
M

Medical Campus Gets A Meeting Place

Eric P. Newman Education Center
St. Louis, Missouri
Cannon, Architect

Projects at medical centers all too often mean solving problems created by willy-nilly growth. An animated and dramatically daylit classroom building ties together two levels of circulation.

By Cheryl Kent

Universities and hospitals have a common architectural problem—accretion. Driven by institutional growth, new technology, and funding availability, these facilities expand as they will in ways that are not so much rational for the whole as appropriate to the moment. The Washington University Medical Center in St. Louis has begun to bring order to this chaos by consolidating the 30 or so scattered and independently scheduled meeting facilities into a single, technologically sophisticated, centrally controlled and schedule-monitored building, the Eric P. Newman Education Center.

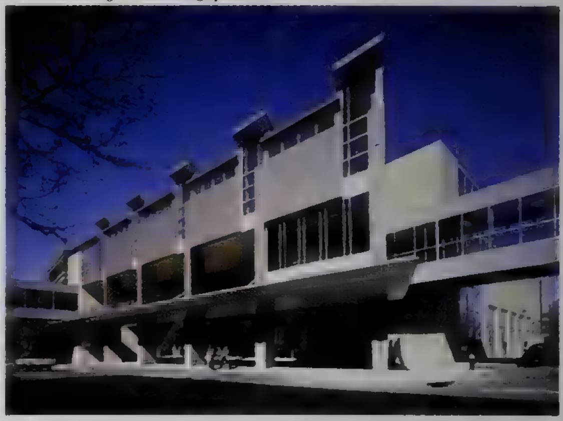
The medical campus's unplanned jumble created site-planning obstacles for St. Louis architect Cannon (formerly Cannon/Pearce Turner Nikolajevich). One site Cannon analyzed was at the heart of the complex, but straddled a street and below-grade commuter train. It called for the Education Center to be erected above a second-story elevated walkway system that runs throughout the medical center. The site ultimately chosen borders the treatment and research sections of the medical complex. It faces parking lots on three sides, which are to be replaced in future expansion. The elevated walkway had to be accommodated on this site, too.

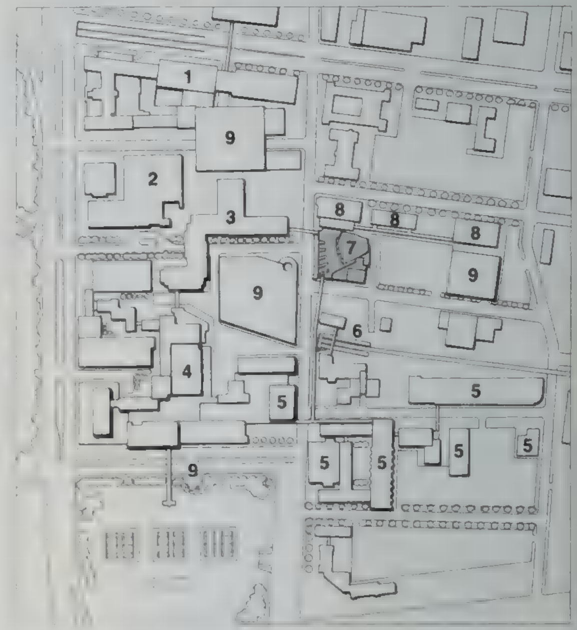
In early conversations, the clients emphasized eliminating redundant services and upgrading conference tools. They didn't think the building needed a strong architectural presence. Working within these boundaries, the architect strove to distinguish the building. Cannon's principal-in-charge of design, George Nikolajevich, says, "Everything relies on movement and functions, not secondary details." A materials palette of light brick, silver aluminum, and tinted green glass together with a subtly animated facade of overlapping planes and alternating voids also recalls the work of the early Modernists, whom Nikolajevich admires.

When the architects received the commission, one of the first things they did was to have a look at competing facilities at Duke University, the Mayo Foundation Medical Center, and Johns Hopkins University to be sure the St. Louis facility would measure up. Thus the 450-seat auditorium is fitted with satellite links and audio/visual equipment for projecting real-time videos of remote surgical procedures, X-rays, computer screens, or conventional slides. Powerful rear-projection means that ambient lighting for note-taking can be maintained. All of this sophistication pushed the cost of the 45,400-sq-ft building to $8.6 million, for a per-sq-ft cost of nearly $190. The building may lack architectural frills, but it has a richness and complexity suited to the Medical Center's need to accommodate prestigious programs and continuing education.

Cheryl Kent is a former correspondent with Progressive Architecture *and writes about design from Chicago.*

© Timothy Hursley photos.

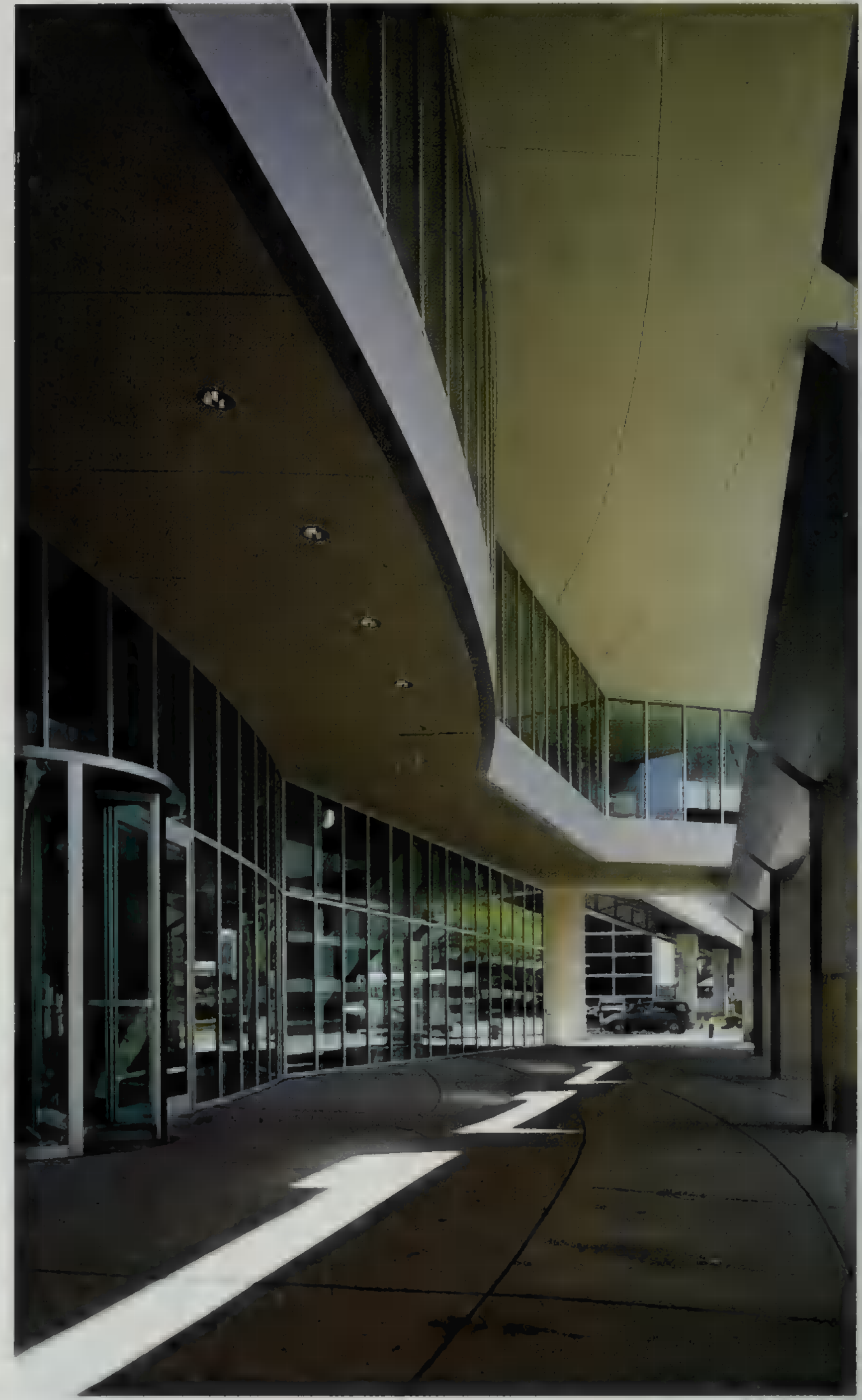




The technically sophisticated classrooms, meeting rooms, and auditorium of the Education Center serve a sprawling medical and teaching complex (site plan). Passersby make use of the Euclid Street canopy as much as those actually using the Medical Center (opposite).

1. *Jewish Hospital*
2. *Childrens Hospital*
3. *Clinical Sciences Research Building*
4. *Barnes Hospital*
5. *Medical school*
6. *Light-rail station*
7. *Eric P. Newman Education Center*
8. *College of Pharmacy*
9. *Parking garage*

STOP



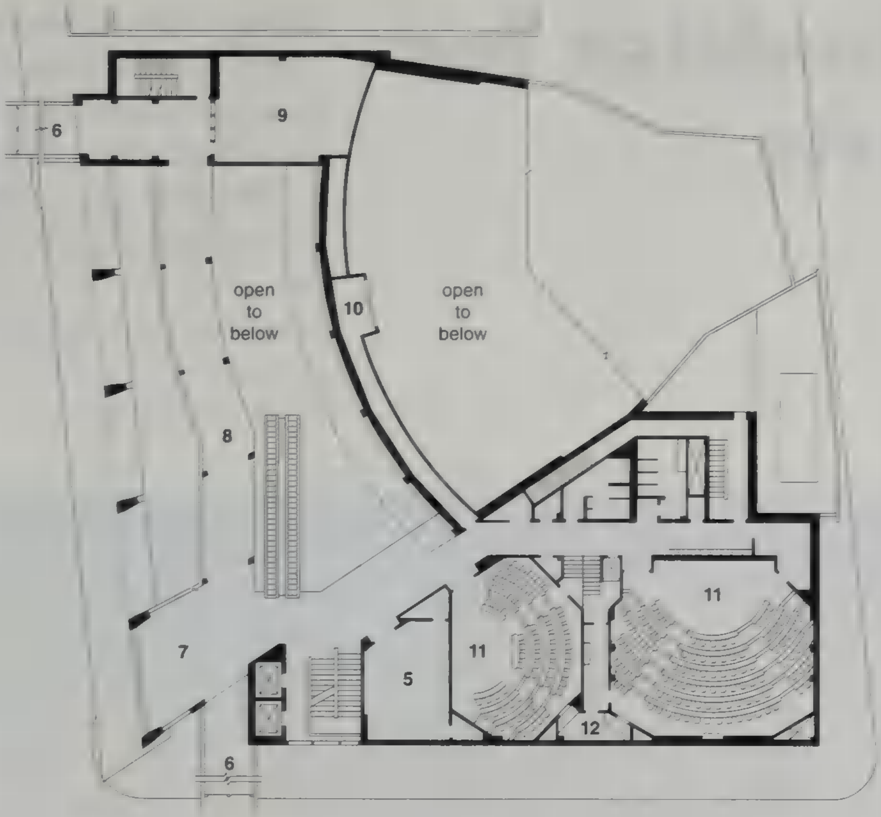
Placing the auditorium at the first-story northeast corner adjacent to the only existing neighboring building was the primary move from which the rest of the plan logically unfolded (plans and opposite bottom right). That gesture permitted the architects to open the lobby and meeting rooms to sunlight and the fronting street, Euclid.

The outer curtain wall is pulled back from the street. A canopy protrudes to the site boundary, creating a grand entry for a relatively small building and alleviating any sense of being crowded by the street's close proximity (top photos opposite). The atrium lobby (opposite bottom left) becomes a break-out area between sessions; larger crowds can spill into adjacent meeting rooms which overlook a side street.

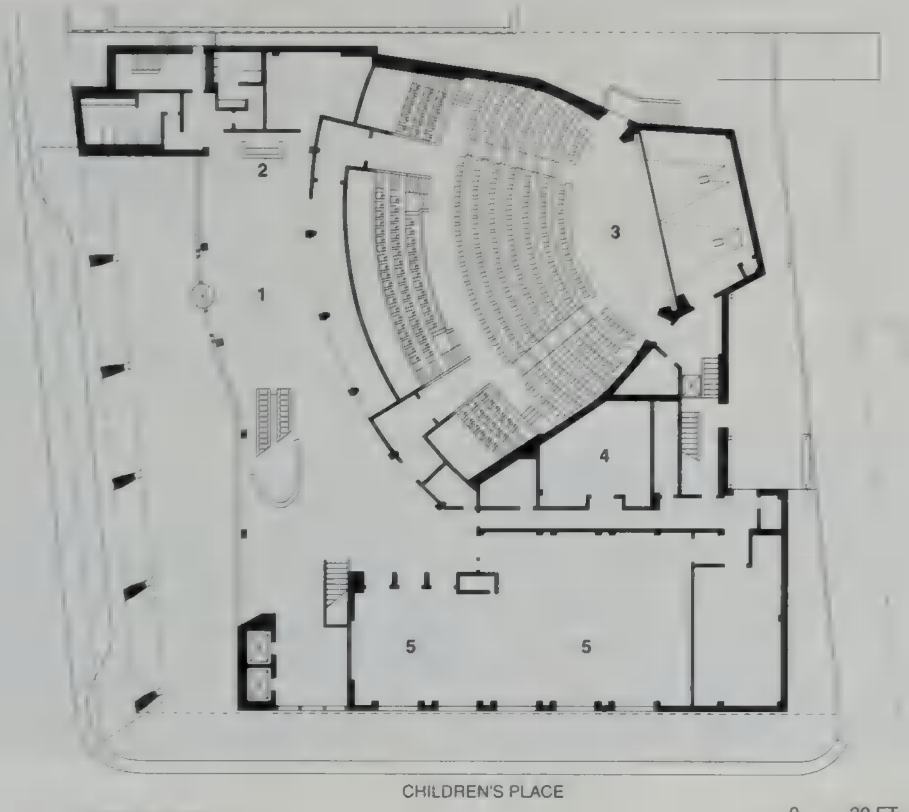
On the second level, meeting rooms open to the atrium; the corridor doubles as the elevated-walkway connector. (A screen secures the building when closed from the walkway.) On the third level, what would have been conventional, even dismal, meeting rooms are saved by clerestories (section) which create an abstracted sculptural effect when viewed from the interior.

Credits
Eric P. Newman Education Center
St. Louis, Missouri
Owner: *Washington University Medical Center*
Architect: *Cannon—M. Kent Turner, project principal; George Z. Nikolajevich, design principal; Mark R. Banholzer, Michael T. Felton, P. Kirk Warden, project team*
Engineers: *Siebold, Sydow & Elfanbaum (structural); Cannon (mechanical, electrical, plumbing)*
Consultants: *Randy Burkett Lighting Design; Osterdaard Acoustical; Boyce Nemec Designs (audio/visual)*
Contractor: *McCarthy*

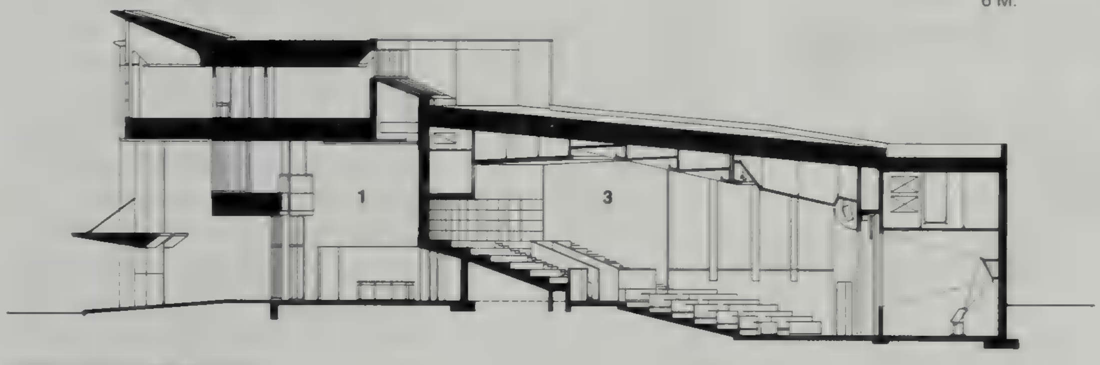
1. *Lobby*
2. *Information*
3. *Auditorium*
4. *Kitchen*
5. *Meeting room*
6. *Elevated-walkway bridge*
7. *Lounge*
8. *Balcony/concourse*
9. *Staff office*
10. *Control/front projection*
11. *Lecture*
12. *Control room*



SECOND FLOOR



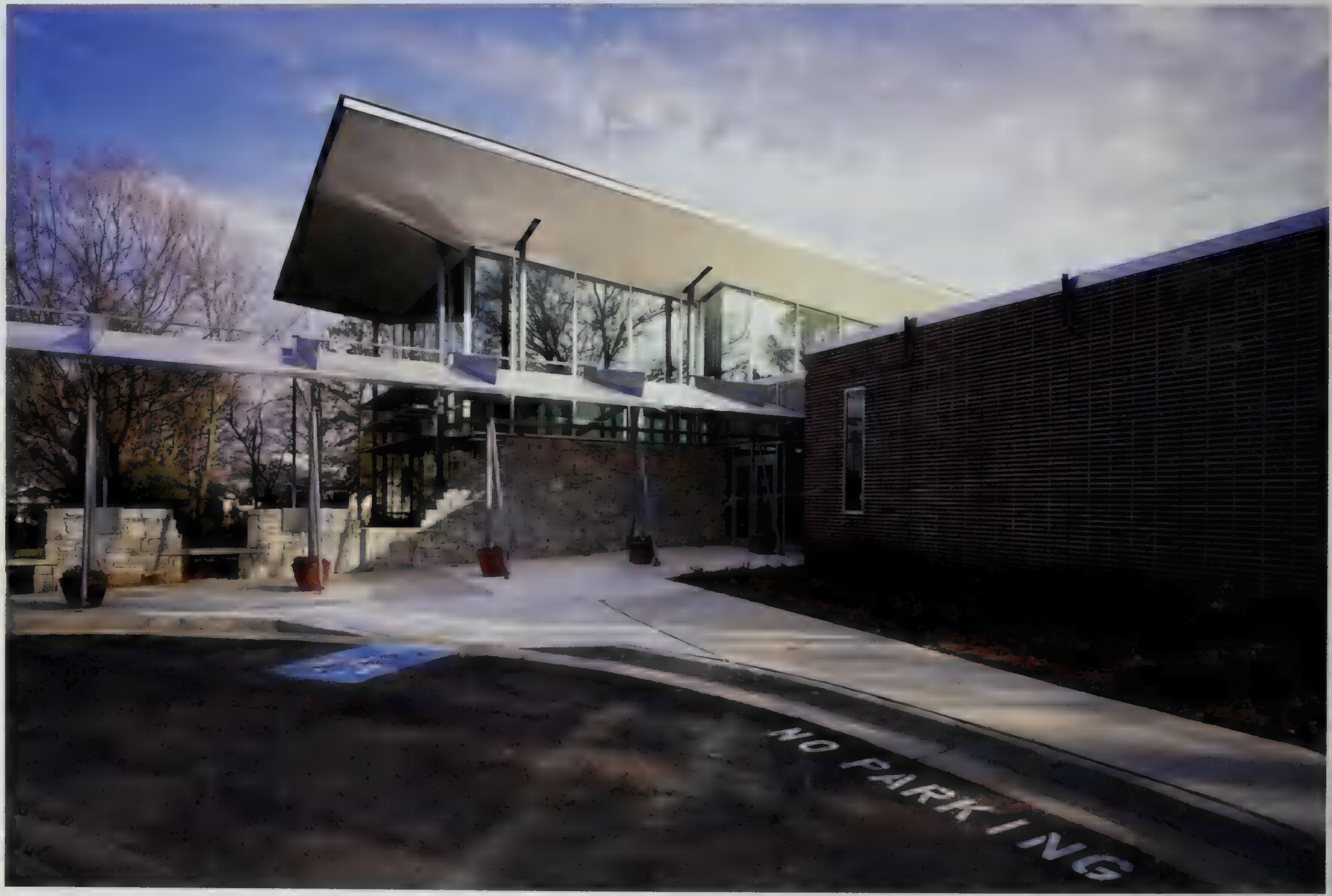
FIRST FLOOR



SECTION LOOKING NORTH

Opportunities for Architects

Eighty-six-million Baby Boomers are growing old, and their parents and grandparents are living longer. Consider this: life expectancy in the United States is 79 for women and 73 for men. Back in 1850, the figures were 40 and 38, respectively. Just as they turned rock 'n roll into a world industry in the 1950's and 1960's, the Boomers—who represent 31 percent of the American population—are on the brink of making aging a very hot business. With age comes disability. So it is no surprise that special facilities for the



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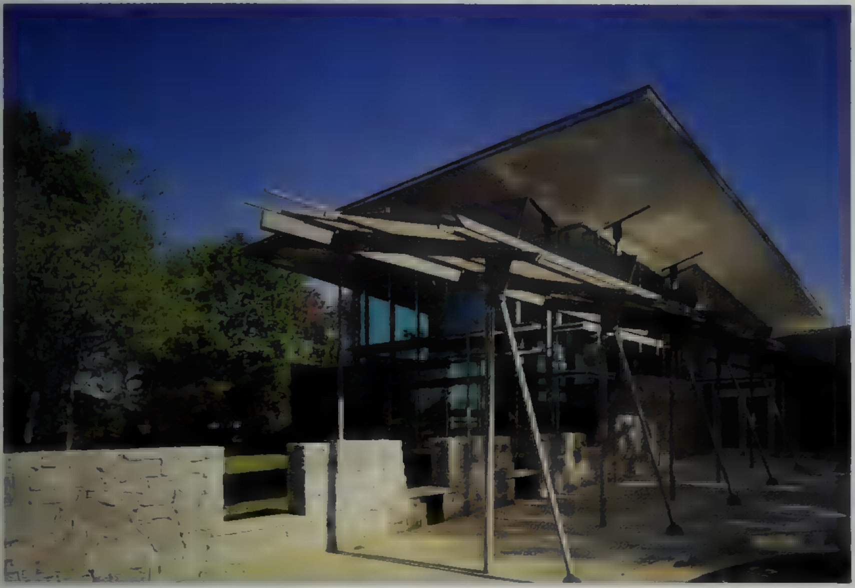
H. J. C. Bowden Center for Seniors

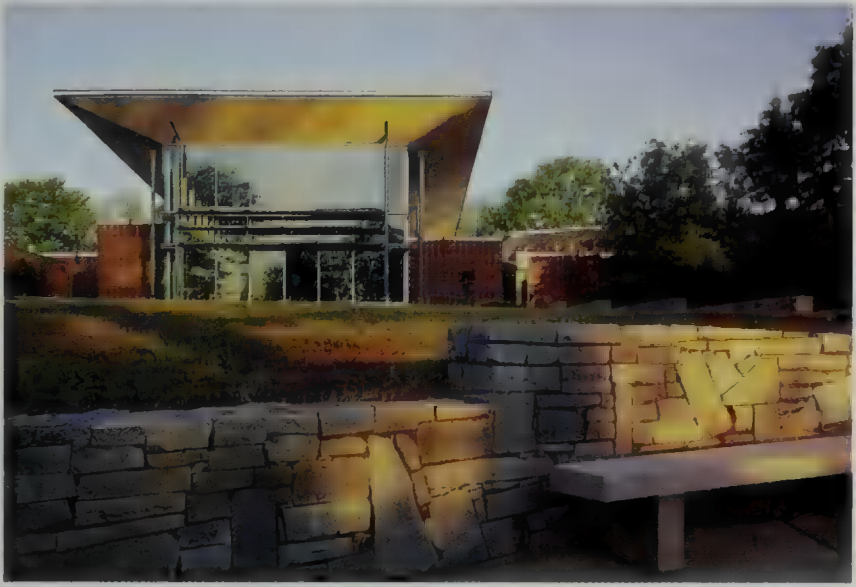
East Point, Georgia
Stanley Beaman & Sears, Architecture

The site of the H.J.C. Bowden Center had been a vacant lot where a school once stood in East Point, a long-established suburb of Atlanta. The facility is the first of five planned by Fulton County to provide health, social, nutritional, and recreational activities all in one place, says county project manager Michael Katzin. To establish a program, architects Stanley Beaman & Sears worked in concert with the operating agency, the county Department of Human Services, to conduct many brainstorming sessions with a local group of active seniors before and during design.

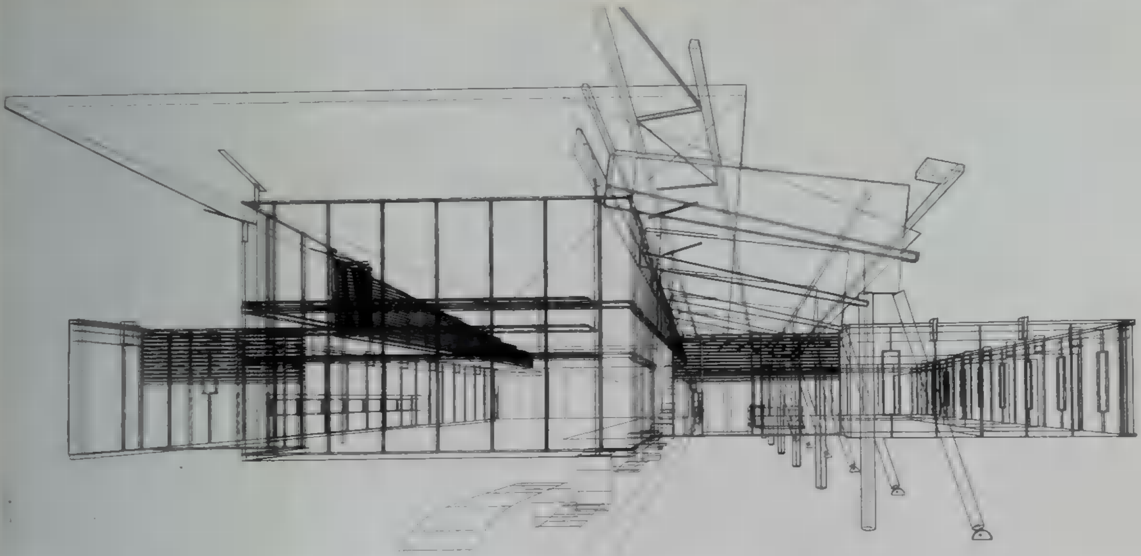
One of the interviewers' first findings was that the healthy active elderly do not like being around the frail. Robust seniors' perception of when they are "old" is always sometime in the future.

elderly, the blind, the deaf, and the physically disabled represent a growing opportunity for architects. None of these special populations, though, wants to be stigmatized or set apart from the rest of society. They may need facilities with particular design and programmatic features, but they don't want these buildings to look different from all of the others around them. Integrating the elderly and people with disabilities into the mainstream of society is a major goal today and architecture has a role to play. While





Stone walls around the site symbolize continuity while the building's structure generates energy.

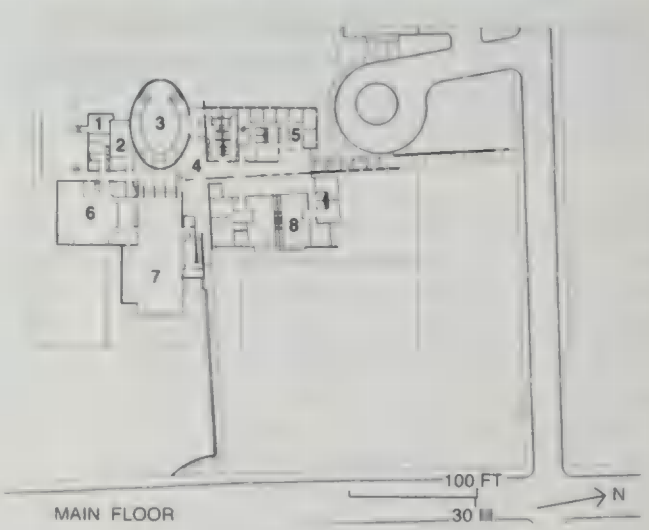


And they do not like being reminded that they too may fail. But they have the ability to inspire by example healthier attitudes in those who are not coping as well as they are. To make sure that seniors of all ages and conditions do mingle, design-lead Betsy Beaman's project team created an open floor plan where all users cannot help but meet. A second finding was that seniors on the advisory group felt that the general public held them in low esteem because they lacked vitality. The members used terms like "tired" and "washed up" to describe younger people's attitudes toward them. And they hoped that the new center would counter such perceptions by conveying youthful energy through a forward-looking design. The architects' response was to expose the lively activities within, including regular dances and receptions, to the neighborhood through large glass walls of social-function rooms that reach out toward surrounding streets. (For protection, a security system is hooked into the county's central-monitoring station.)

The architects also used selected elements of the steel structure to express energy as powerfully as possible. The first impression visitors and users get as they arrive at the drive-up entrance is created by a long sheltering canopy, dynamically sculptured of exposed beams and struts topped with translucent-plastic panels (opposite, above left, and concept sketch).

The dining hall roof (above right and following pages) slopes toward its center in a bird-wing profile, suggesting it is about to take flight. To produce a further kinetic effect, the stationary tops of the exterior steel columns are shaped to appear like moving pistons (top left in photo opposite). They pass through slots in the soffit to support a spanning system of inverted triangular King trusses on slip-bolted joints. Most of the rest of the center has flat roofs built with economical bar-joists. One other exception to the straightforward steel framing is the exposed poured-concrete structure of the therapeutic pool (below) where a class in arthritis-relieving exercises is shown in progress. Initially, the pool was in question by the programmers. But the seniors' committee was adamant. Most of them had seen the movie "Cocoon," in which oldsters were rejuvenated as they swam. Further, the pool had to be oval and be called a "spa" like the one in the film. The pool and an adjacent exercise room have turned out to be among the center's most popular attractions, notes Katzin. Another is the free dental care and monitoring of medications and blood pressure in a clinic to the right of the entrance.

Two program factors tended to drive up construction costs beyond those for a normal senior center. One was the pool and the other was the full-blown commercial kitchen designed to supply meals not only to the dining room, but to a local Meals On Wheels program. In addition, the user committee was vitally interested in durable materials that would last and express confidence in the future. "We're building this for you some day," one committee member told the architects. Hence, the heavy-duty, barrier-free hardware and

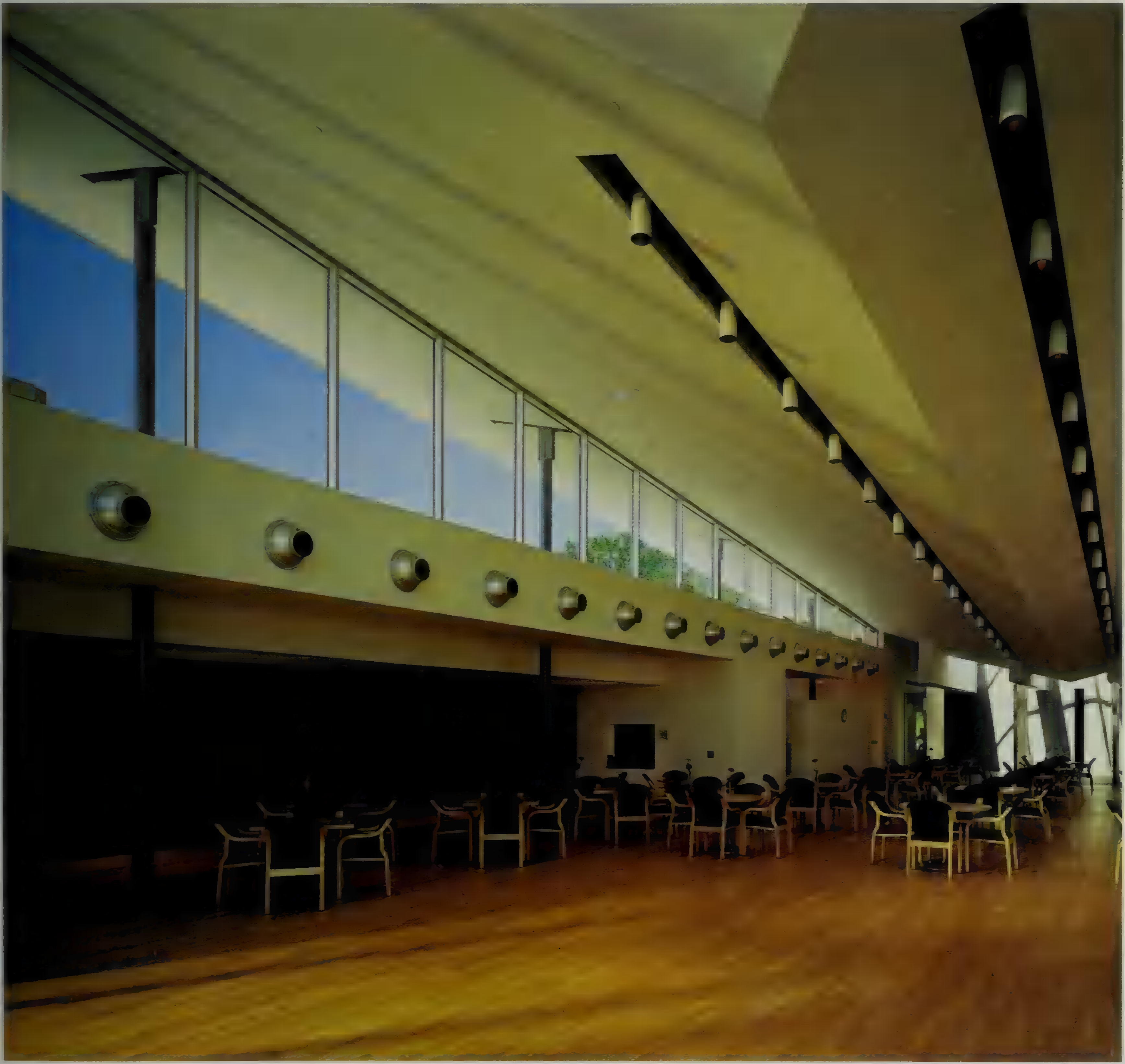


The dining hall (opposite) serves prepared meals at nominal cost and also holds large social functions. Wood pivot doors close it off.

1. *Service*
2. *Exercise*
3. *Pool*
4. *Lobby*
5. *Office/clinic*
6. *Kitchen*
7. *Dining*
8. *Activity rooms*

slate floors. But the architects did not stop there. They commissioned local mason Danny Clack to build a rubble stone wall running from outdoors through the vehicular entrance and down the center of the lobby, symbolizing permanence and ending in a free-standing boulder, "the rock of ages," recessed into the floor outside the dining hall. Clack also built stone walls all along the street frontages. Considering the amenities and quality, the construction and equipment cost of $100 per sq ft seems low. "We were lucky," explains Beaman. "We put the project out for bids just before demands for construction of the Olympics' facilities drove prices sky high."
Charles K. Hoyt

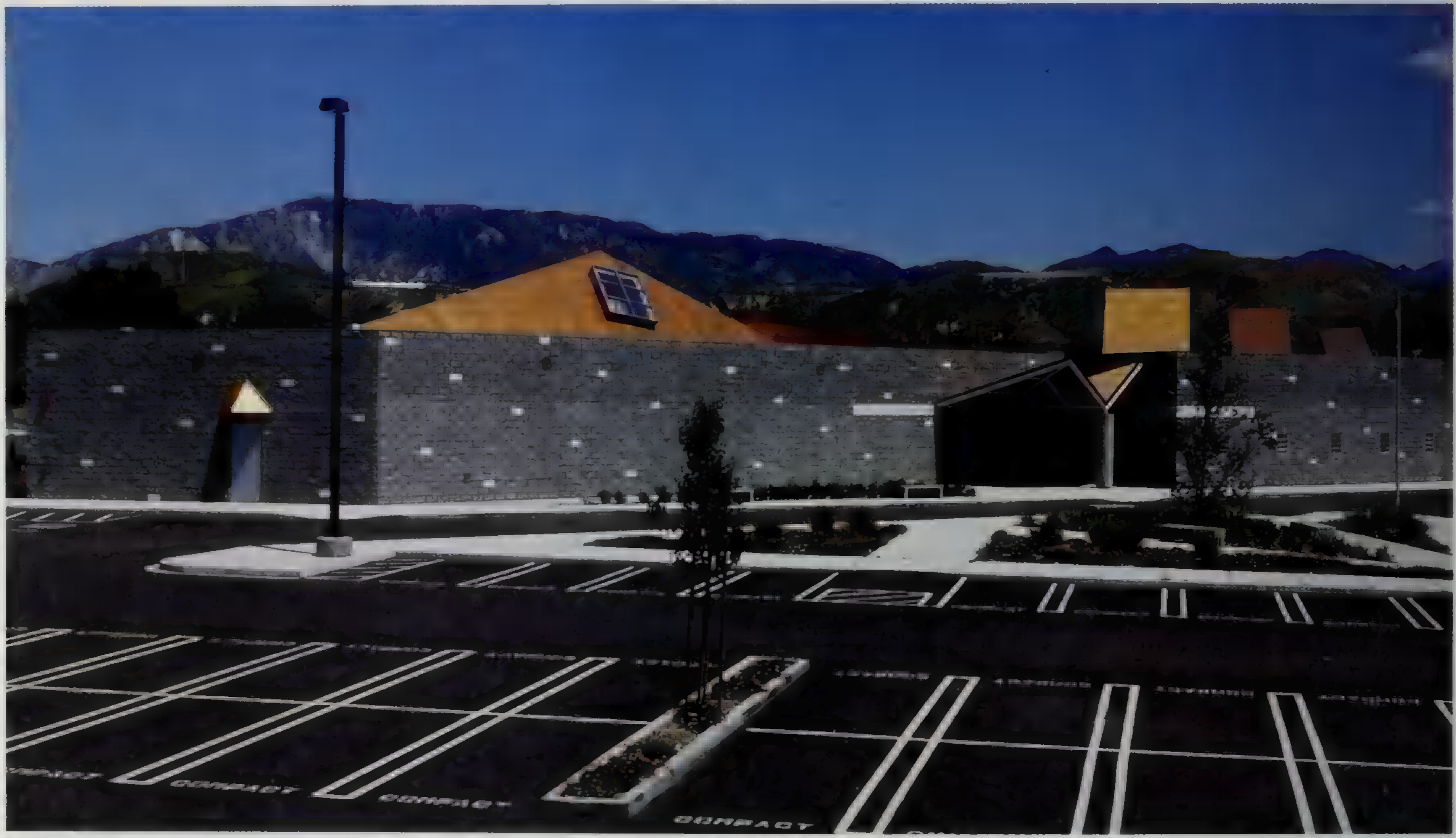
Credits
H.J.C. Bowden Multi-Purpose Senior Center
East Point, Georgia
Owner: *Fulton County*
Architect: *Stanley Beaman & Sears, Architecture—Kimberly Stanley, Betsy Beaman, Burn Sears, Chris Domin, Portia Gubatan, Veronique Pryor, Kimball Robinson, Nelson Weeks, project team*
Engineers: *Harrington Engineers (civil and structural); Khafra Engineering Consultants (MEP and fire protection)*
Consultants: *Jones-Worley Design (graphics); Judy Ford Stokes (kitchen); Rodger Construction Consultants (costs)*
General Contractor: *Nix-Fowler Constructors, Inc.*



Northeast Valley Multipurpose Senior Center

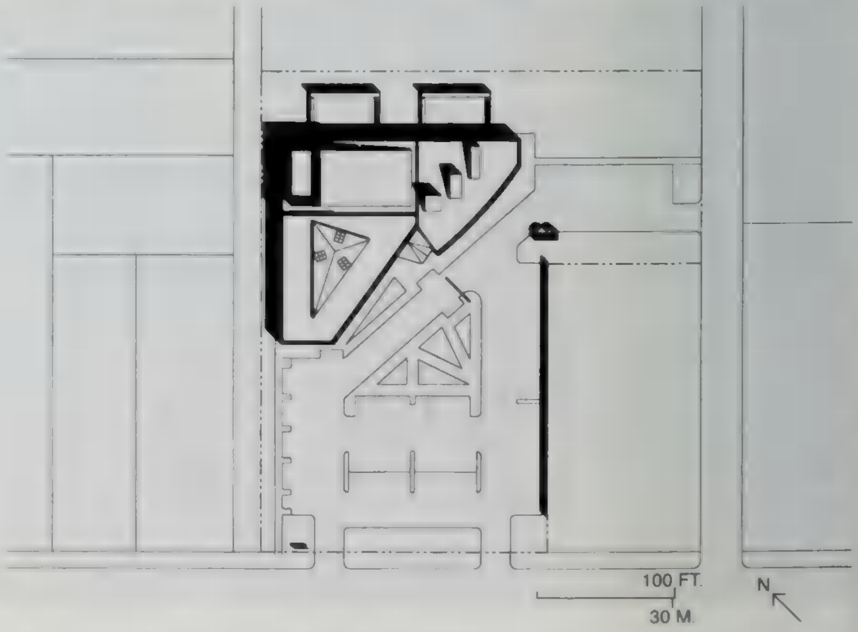
Pacoima, California
R.L. Binder Architecture & Planning

It's a tough neighborhood and security was a major concern. Design guidelines set by the client, the Los Angeles Department of Recreation and Parks, reflected these conditions: no windows, no hiding places in facade nooks or niches, no corners that obstruct views. Fencing around courtyards had to be open-rail and parking had to be upfront so nothing sinister could happen out of sight. Starting with such unpromising ground rules, Rebecca Binder and her project team designed a 16,000-sq-ft senior center that has been welcomed by the surrounding community and the people who use it. And despite its lack of fenestration and the concrete block that is its main construction material, the building is anything but a bunker. One way the architects softened its appearance was to vary the finish



© Tom Bonner photos

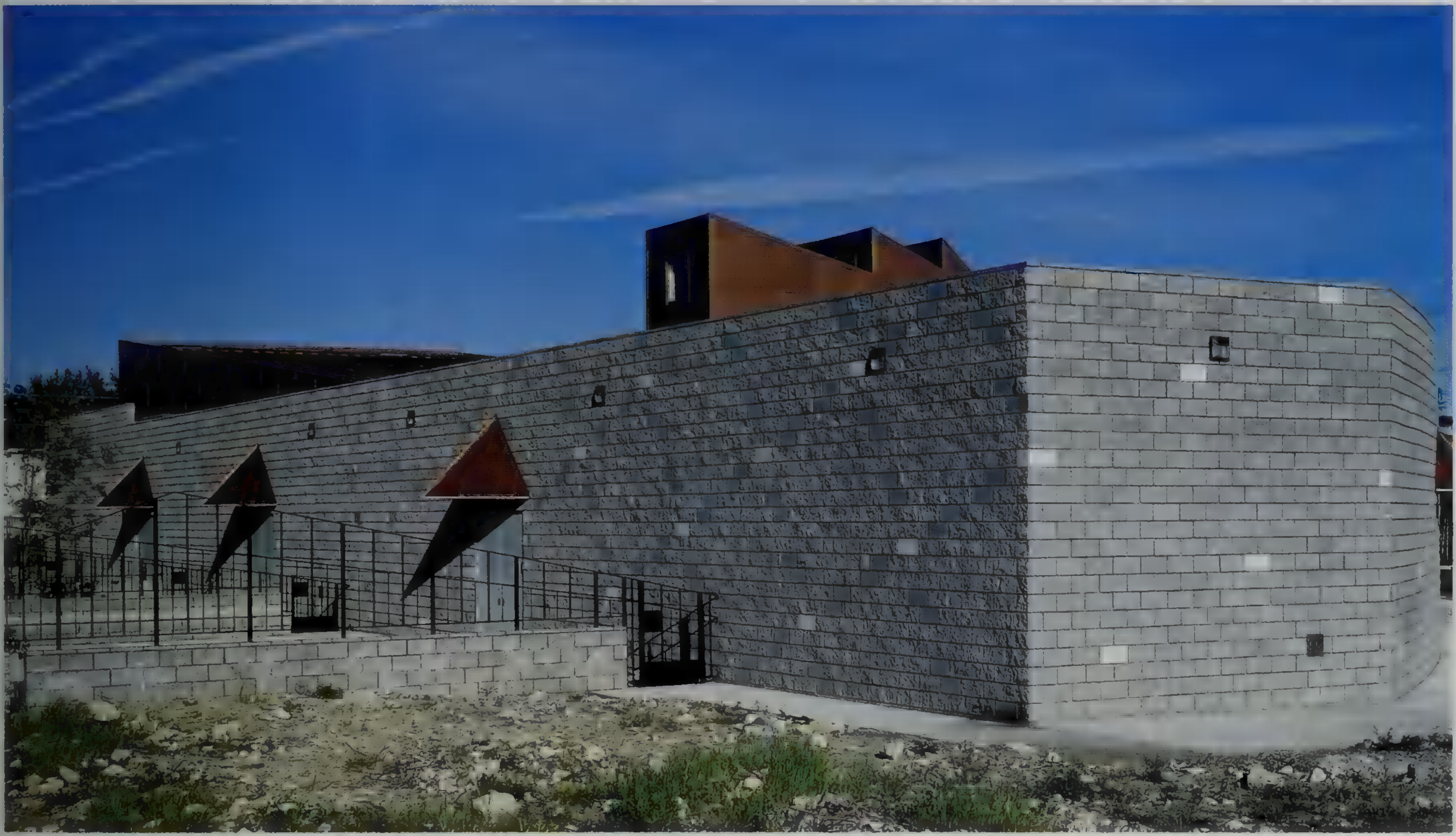
Originally planned to be built in two phases, the entire 16,000-sq-ft senior center was built at one time. The design allows the center to work either as one large facility or two smaller ones. The component for active seniors is to the left of the main entry (photo above), while the facility for seniors with Alzheimer's Disease is to the right.

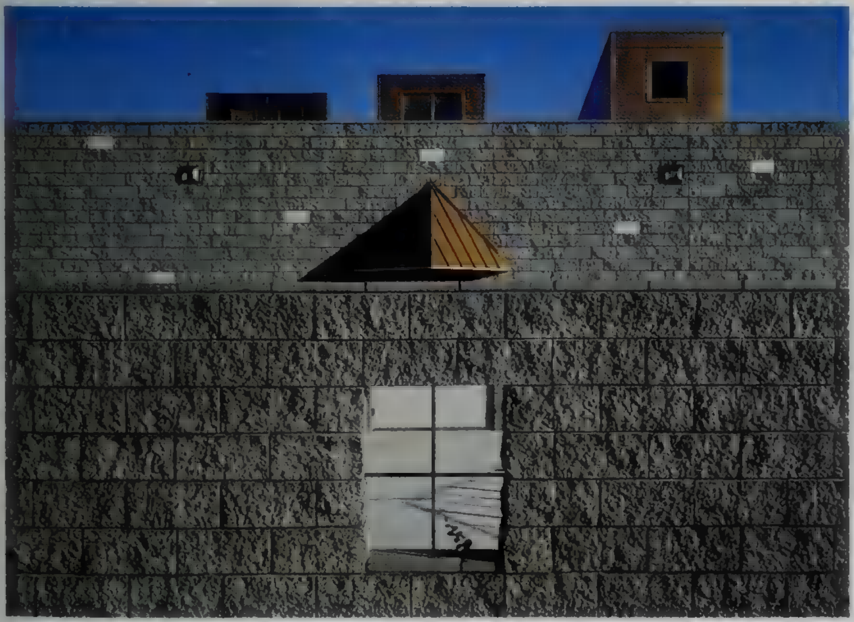


of the concrete block, using split-face and smooth blocks, as well as two different colors of blocks. Angular copper canopies at the main entrance and at irregular intervals along the facade also provide visual relief to what is essentially a solid front.

The key to the building's success, though, lies with its roof and the large copper-clad monitors and skylights that flood interior spaces with daylight. From a distance, the sharply pitched monitors inject a few high notes to the low-key massing of the rest of the building. Inside the senior center, the roof elements are revealed as rising open volumes washed with sunlight. "This is one of my favorite buildings," exclaims Armando Delao, a project manager with the Department of Recreation and Parks, who worked on the senior center. "The interiors are just unbelievable with all the light coming in."

The building is really two facilities that can operate either together or independently: a social center for active seniors and an adult-daycare center for people with Alzheimer's Disease. Although they share one entry canopy, separate doors provide access to the two components. Inside, one set of doors can either open or close the two halves of the building to each other. Since many of the people using the building have trouble remembering directions and orienting themselves, the architecture has to make wayfinding simple. "We eliminated all corridors by creating open spaces where people can socialize and easily spot each other," explains Binder, referring to the

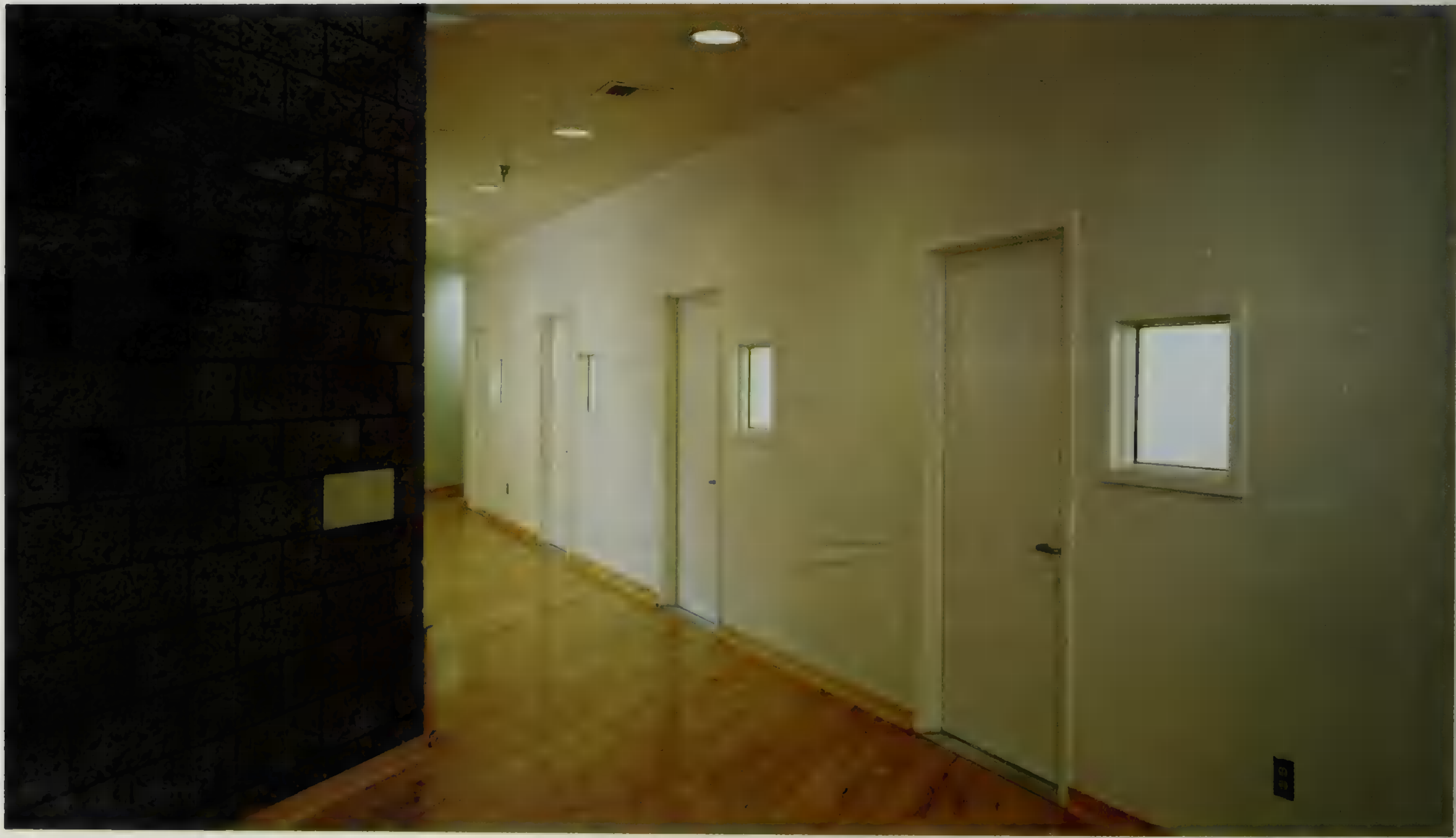


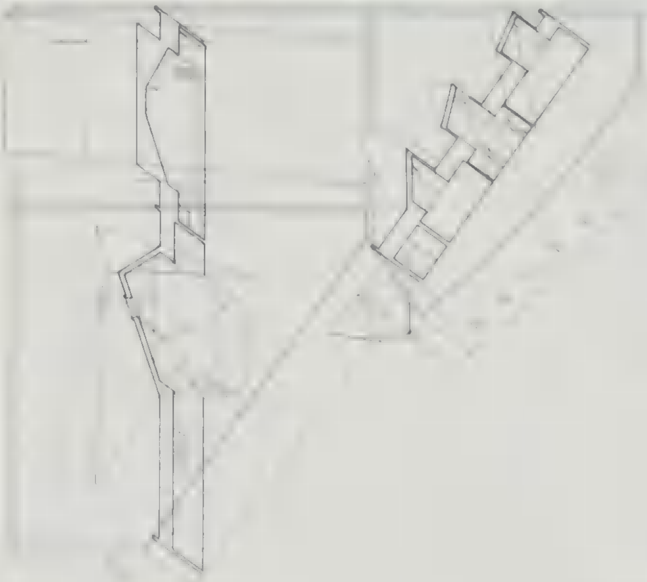


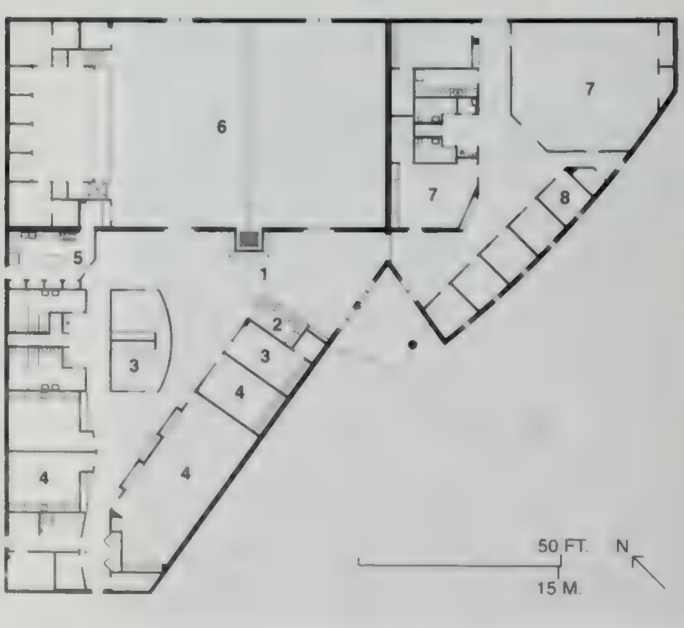
On the back of the building (above), two terraces provide outdoor areas where Alzheimer's patients can be supervised. Copper-clad light monitors and canopies provide visual accents to the masonry building.

central lobbies for each of the two program components. Designed almost like the central plaza of a small town, the lobby to the regular senior center has benches built along its perimeter and a pavilion housing restrooms in the center. Storefront windows let people look into activity rooms from the central lobby, giving them the chance to see if they want to go in or not. Wood floors add warmth to the interiors and because they're resilient, they're more comfortable for seniors to walk on. "The scale is very comfortable," says Binder, "so it seems more like a house than an institutional space." The facility includes adjacent multipurpose rooms with a movable partition separating them, a billiards room, craft rooms, a warm-up kitchen, consulting rooms for Alzheimer's patients, and two outdoor areas off the Alzheimer's facility. The function rooms were designed, though, so interior partitions can be moved if the facility's program changes. The center, which was built for $2.1 million (about $130 per sq ft), has been so successful that a city councilman from a different part of L.A. has asked for a similar one for his district. As a result, Binder's firm will adapt the design to a new site.
Clifford A. Pearson

Credits
Northeast Valley Multipurpose Senior Center
Pacoima, California
Architect: *R.L. Binder, Architecture & Planning—Rebecca L. Binder, Kim A. Walsh, Joseph Sion, Chilin Huang, project team*
Engineers: *Grossman & Speer (structural); M.B. & A (mechanical); Mirahmadi & Associates (electrical)*







A central space (opposite) makes wayfinding easy. In the Alzheimer's area (above), wood floors are easy on people's feet.

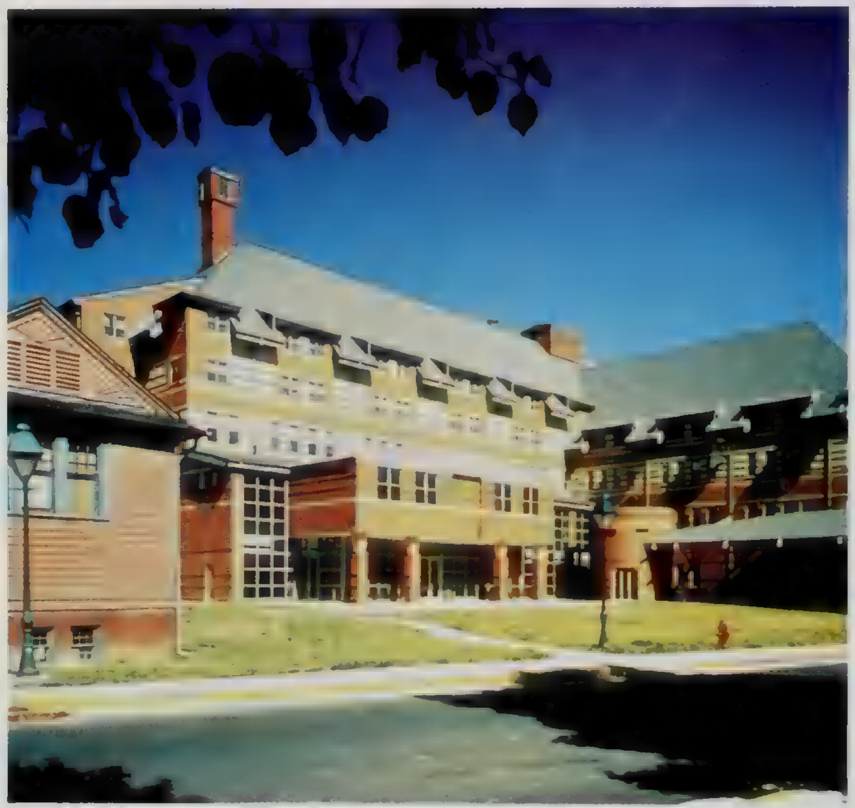
1. *Lobby*
2. *Reception*
3. *Office*
4. *Activity*
5. *Kitchen*
6. *Multipurpose*
7. *Meeting*
8. *Consultation*

Kellogg Conference Center

Gallaudet University
Washington, D.C.
Einhorn Yaffee Prescott, Architecture and Engineering

Einhorn Yaffee Prescott's mission was to create a state-of-the-art conference facility to meet the training and continuing-education needs of the deaf. The biggest challenge, according to EPY principal Hugh Latimer, was creating a building that would fit into Gallaudet's Frederick Law Olmsted-designed campus and its Victorian buildings, and still be comfortable and modern on the interior for both those who can hear and the hearing impaired. "A neo-Victorian interior wouldn't do for this building."

The resulting building (1) fits the campus, while the inside includes all of the amenities that make buildings usable by the deaf, including "visual music," in the form of daylight supplied in abundance in the cafe (5) and other public spaces, and a lighted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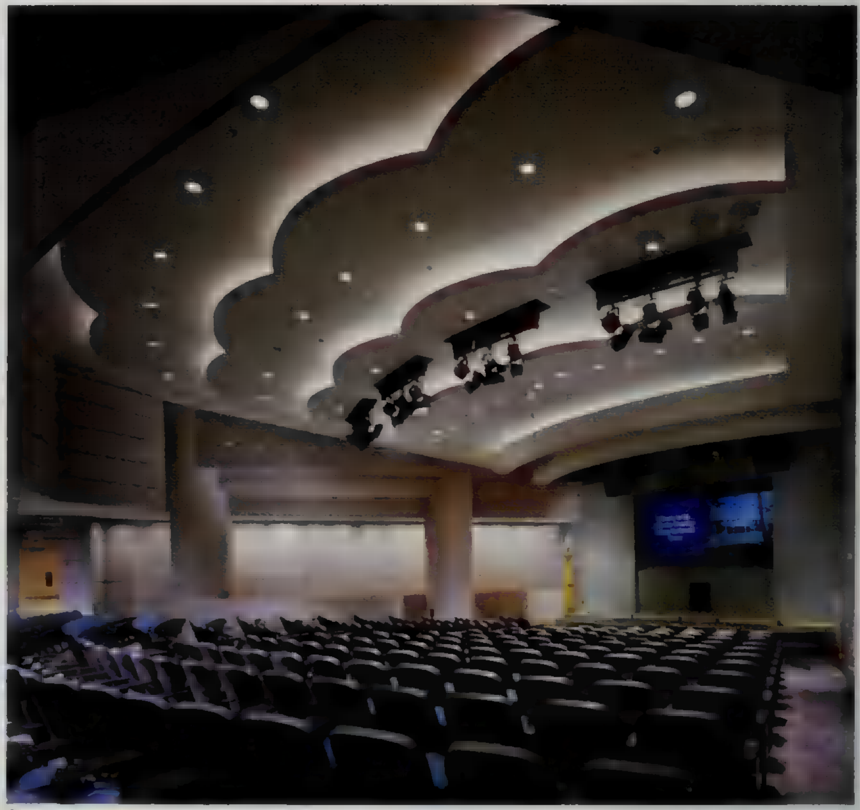
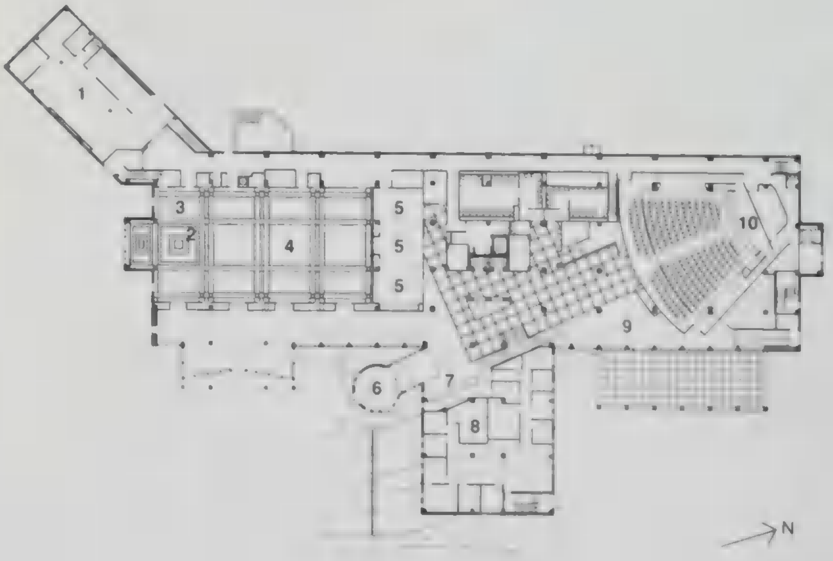
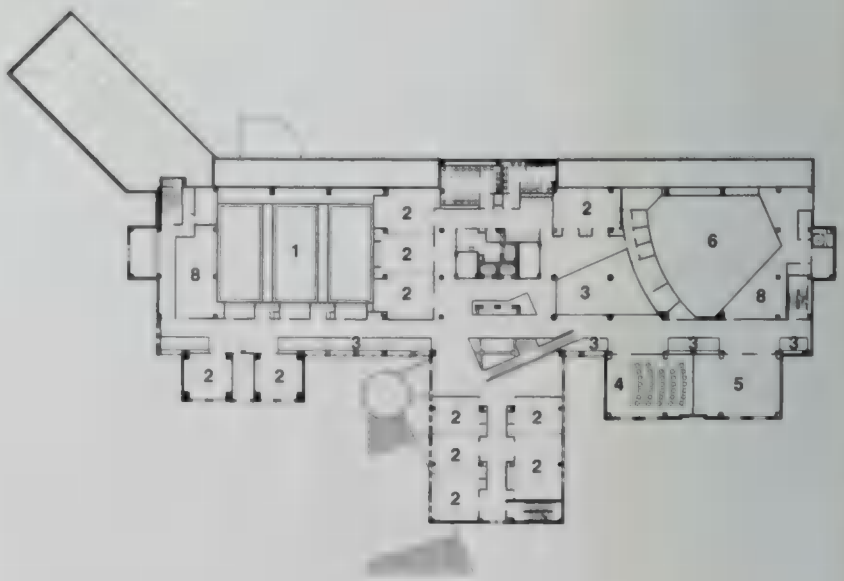

2

1. *Kitchen*
2. *Dining room*
3. *Bar*
4. *Ballroom*
5. *Meeting rooms*
6. *Entrance*
7. *Front desk*
8. *Back of house*
9. *Public lobby*
10. *Auditorium*



1. *Ballroom below*
2. *Meeting rooms*
3. *Open to below*
4. *Meeting room*
5. *Board room*
6. *Auditorium below*
7. *Control room*
8. *Storage*



fountain in the lobby. Background colors are muted and illumination bright so that sign language can easily be seen. Even ductwork was insulated to eliminate noise distracting to a person who is hearing impaired.

The two floors of guest rooms (6) have been equipped with computer links because the deaf rely heavily on electronic mail. Strobe lights are used as emergency warnings and "doorbells." For guests who are deaf and blind, beds vibrate in case of a fire emergency, or to give a morning wake-up call.

The conference center can broadcast meetings worldwide. The auditorium (2) has broadcast-quality lighting, rear-screen projection video monitors, translation rooms for international video conferences, assisted listening devices at each seat, plus unobstructed views of the stage, so no nuance of the signing is missed. A smaller conference room (3) can receive and transmit conferences, and has instant teletype translation of verbal information coming from the control room (4). This room is equipped with wireless infrared headphones for use as assisted listening devices. *Charles Linn*

Credits
Kellogg Conference Center
Gallaudet University
Washington, D.C.
Architect: *Einhorn Yaffee Prescott Architecture and Engineering—Hugh Latimer, principal-in-charge; Tom Fisher, designer; Antonio Yau, interiors; Kevin Eskandry, mechanical; Steve Maskell, electrical*
Structural: *James Madison Cutts, Consulting Engineers*

3

4

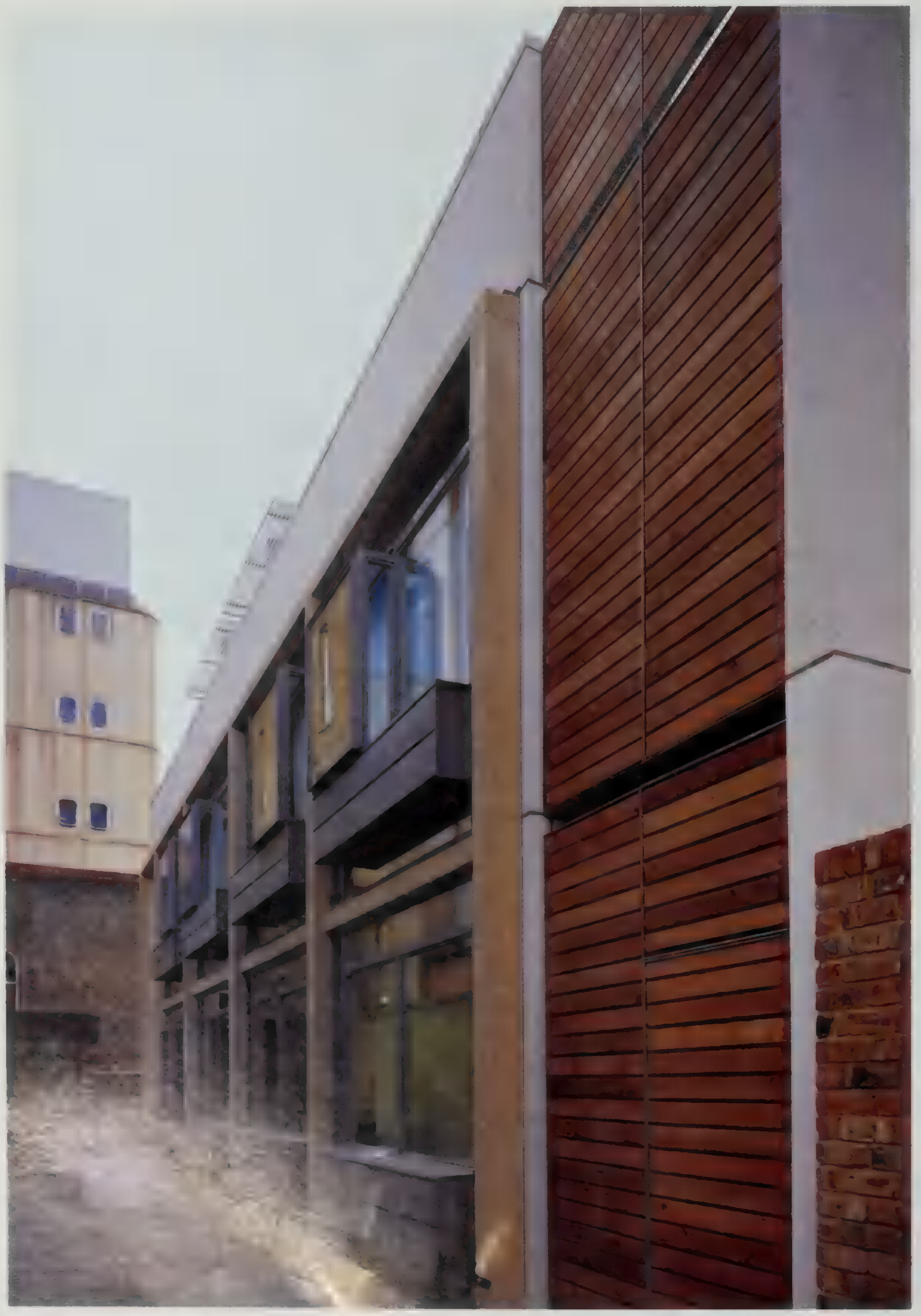
5

6

Christopher Place

London
Troughton McAslan, Architect

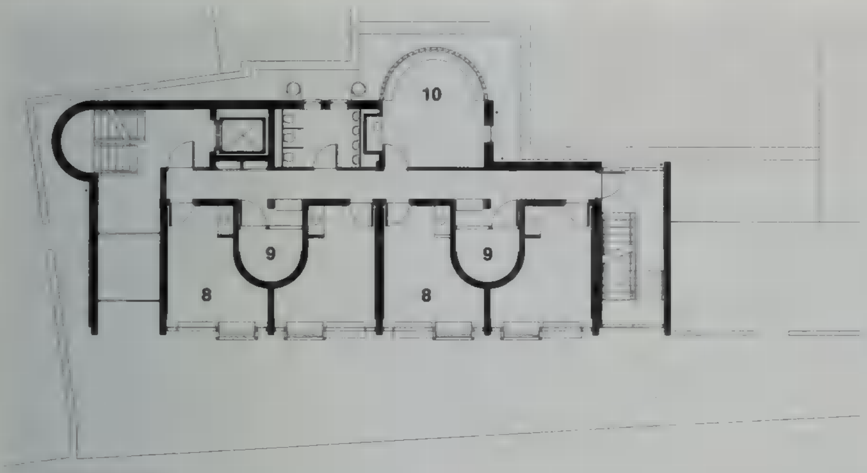
"We wandered into the project," says John McAslan of how his firm, London-based Troughton McAslan, got involved with the design of Christopher Place, a speech, language, and hearing center for children under 5 years of age. Though the commissioning process may have taken some unexpected turns—in 1989 the architects designed an office building on the site for a developer, who in 1992 donated the parcel to his daughter's tutor, Angela Harding, who founded the school—the design is anything but circuitous. Pleased by the charitable turn of events, the local authorities permitted construction of a building nearly 40 percent larger than the intended office-building scheme, in order to provide for therapy programs for 60 children and a staff of eight. The additional space is barely enough. "It's a tight site,"



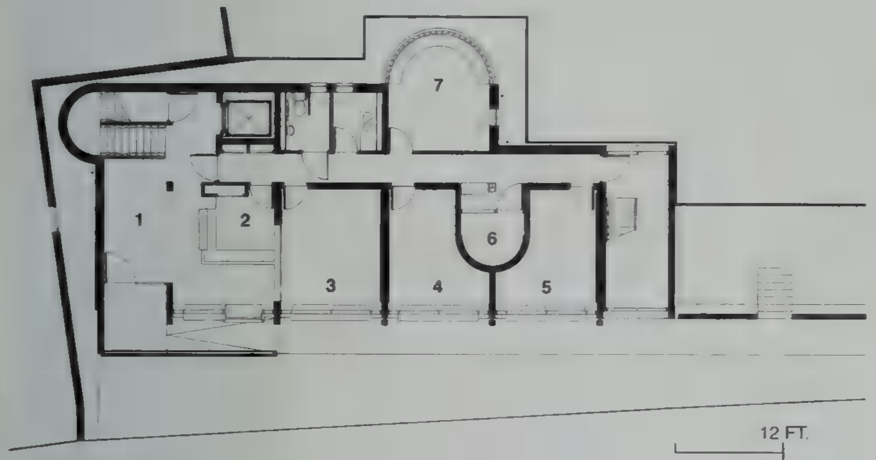
© Peter Cook photos

admits McAslan. The firms' reputation for architectural rigor served them well. The architects shoe-horned a three-story circulation and service block into the site's rear and, at the front, a main volume based on a 3.7-meter structural grid with four reading rooms, two acoustically sealed audiology rooms for hearing tests, and staff areas. The architects were inspired by Louis Kahn's Esherick House in Philadelphia of the late 1950s, and its model of served and servant-spaces and its contrasting facades. Likewise, the center presents a glazed front to the street and a screened back. Inside, particular attention to detail was paid at children's height: window bays have built-in seating and clever storage shelves. "Our architecture is [basically] white," says McAslan, so artist Alison Turnbull was brought in to enliven the color palette. Trevor Shearer, another artist, collaborated on custom furnishings. "We wanted a clear esthetic," explains McAslan of the overall approach. "A clarity of language allows the children's education to be the focus."

Credits
Architect: *Troughton McAslan—John McAslan, principal-in-charge; Piers Smerin, project architect; Murray Smith, Kevin Lloyd, project team*
Engineers: *Ove Arup and Partners (structural and services)*
Consultants: *Boyden and Company (quantity surveyors); Arup Acoustics (acoustics)*
Project Artists: *Alison Turnbull, Trevor Shearer*
Contractor:
Overbury Southern Limited



FIRST FLOOR

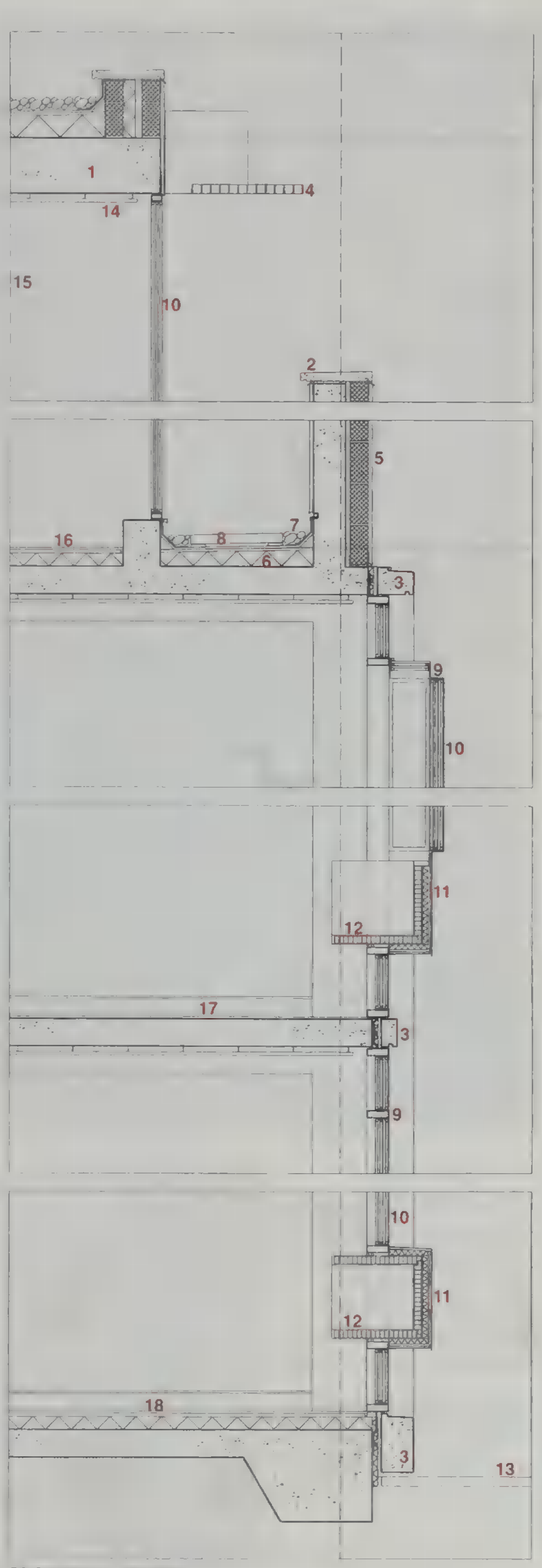


GROUND FLOOR

Services and circulation are tucked into the back of the site (above), allowing a more open front facade (left). Inside, the concrete frame is exposed (opposite left). Beech boxes for seating and storage are built into classroom partitions (opposite right).

1. *Entry*
2. *Reception*
3. *Director's office*
4. *Speech therapy*
5. *Assessment*
6. *Audiology*
7. *Staff*
8. *Group therapy*
9. *Therapy*
10. *Family room*

1. *In situ concrete*
2. *Concrete coping*
3. *Concrete cladding*
4. *Steel louver*
5. *Painted stucco*
6. *Felt membrane*
7. *Rock ballast*
8. *Concrete pavers*
9. *Steel frames*
10. *Laminated glazing*
11. *Zinc cladding*
12. *Beech shelving*
13. *Paving*
14. *Acoustic boarding*
15. *Plasterboard*
16. *Rubber sheeting on chipboard*
17. *Rubber sheeting on concrete*
18. *Carpet*

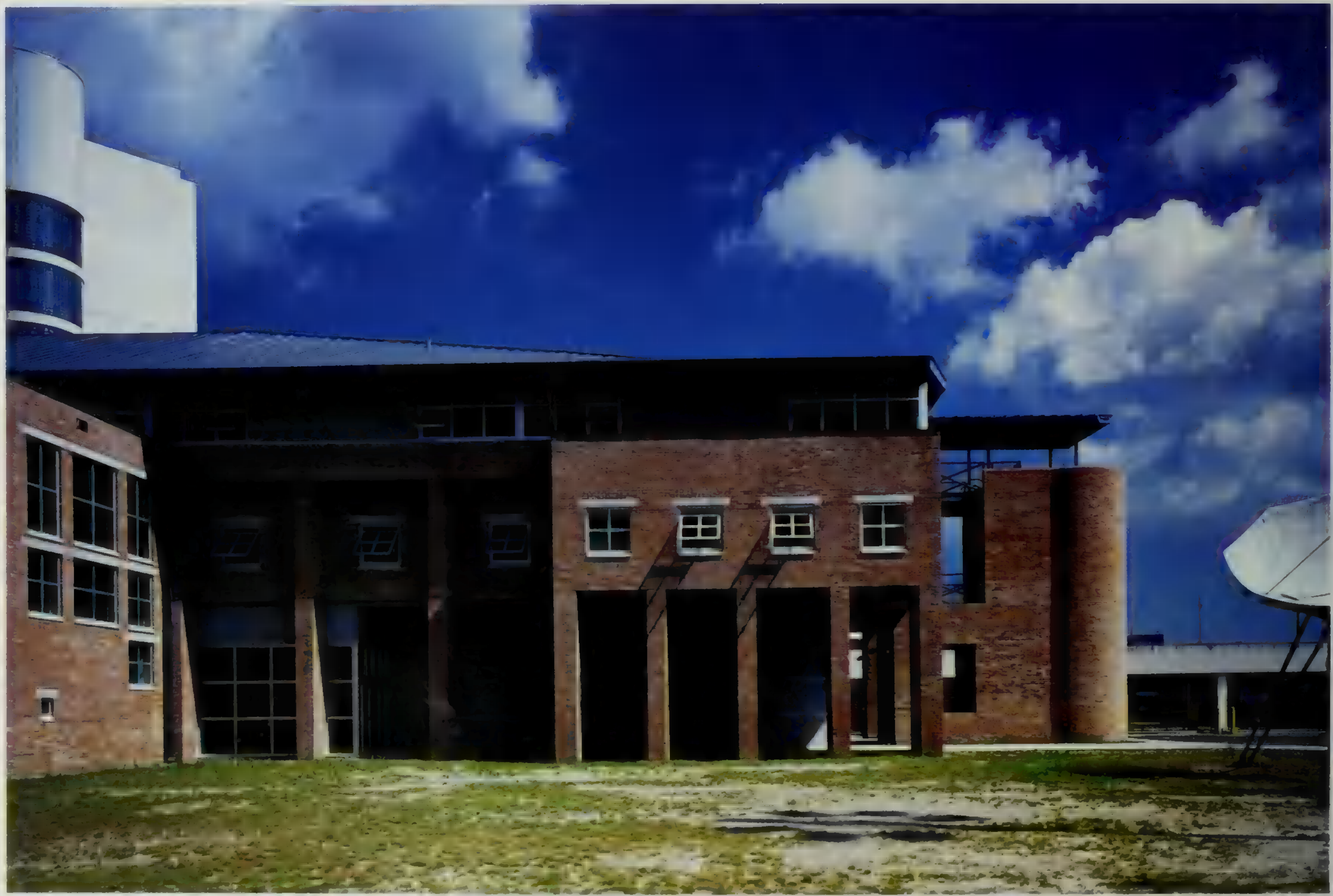


SECTIONAL DETAIL

The Training Resource and Assistive Technology Center

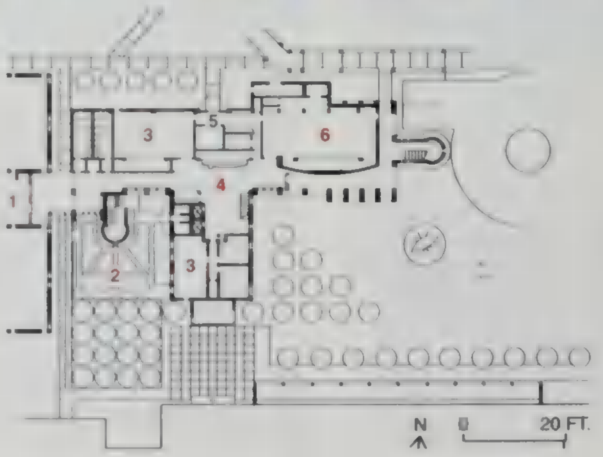
University of New Orleans
Errol Barron/Michael Toups Architects

A vocational training center primarily for the blind, this 29,000-sq-ft facility at the University of New Orleans is part of a movement to "mainstream" people with disabilities. Reflecting its mission of giving people with vision, hearing, and physical impairments the skills to succeed in the world at large, the center's new building fits into the school's Lakefront campus. Connected to an existing dining hall, the new training center acts as a link between a hulking 12-story engineering building and a more modestly scaled dormitory. Nothing about the architecture of the new building screams out "facility for the handicapped." But guided by Oliver St. Pe, a blind man who was the Center's colorful director until his death earlier this year, and Naomi Moore, a coordinator at the Center, architect Errol Barron



© Alan Karchmer photos

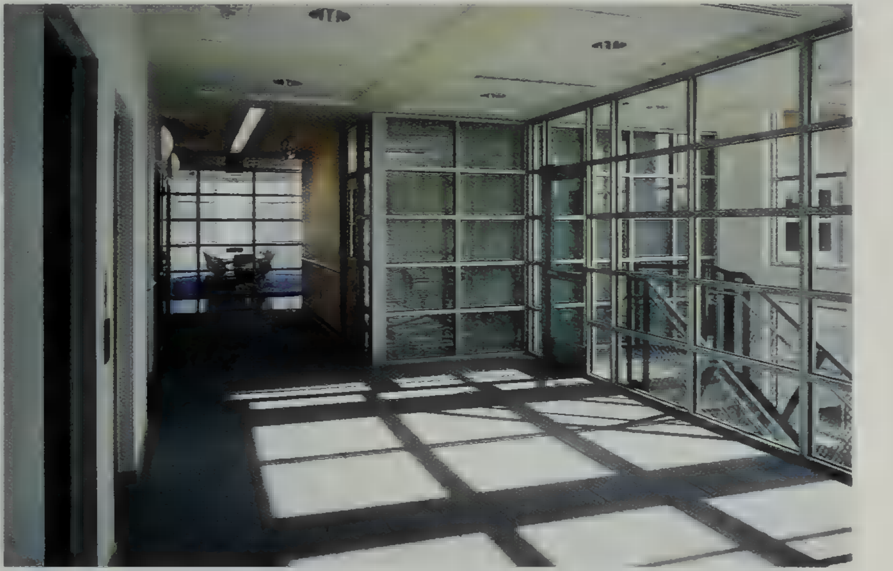
The new building (above) connects with an existing dining hall (site plan, opposite) so it could be funded as an addition and could provide food service for conferences. The large white structure behind the new facility is an engineering building.

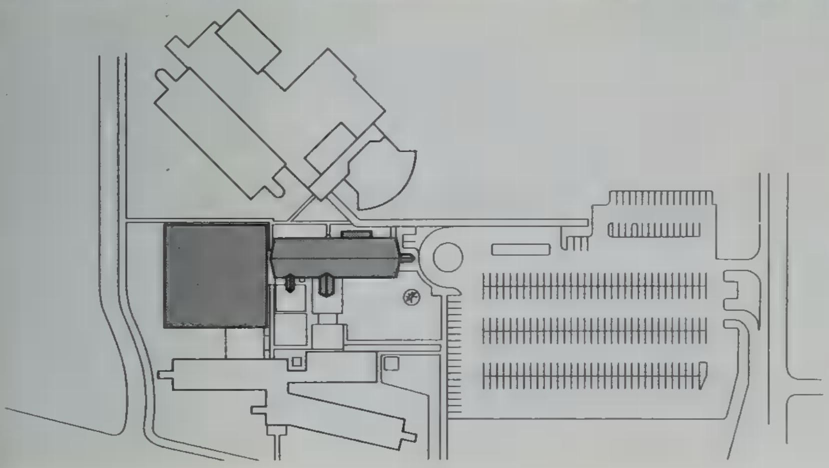


1. *Dining hall (existing)*
2. *Sensory garden*
3. *Lecture*
4. *Lobby*
5. *Service entry*
6. *Conference center*

has made the building a textbook on how to design for the blind. Most importantly, Barron used a straightforward, easily recognizable T-shaped floor plan. "It's easy to give verbal directions," explains Moore. The building also has a simple organization: conference facilities and major public spaces are on the first floor, classrooms and offices on the second, and short-term housing on the third. The architecture calls attention to the intersection of the building's two wings and key places such as stairwells by bringing in daylight, which the blind can feel. Since many of the building's users have some sight, strong contrasts in color as well as in light and shade can provide them with wayfinding cues. The building's exterior has a deeply carved arcade that directs visitors to the entry. Inside, door frames are painted a deep teal that contrasts with the walls' neutral color. Changes in floor textures and light fixtures (from cool fluorescent to warm incandescent) alert users to the location of walls and doors. "The idea was to manipulate architecture to tell people what's going on," says Barron. A sensory garden that is still on the boards will help clients use smell, sound, and texture as wayfinding cues. *Clifford A. Pearson*

Credits
The Training Resource and Assistive Technology Center University of New Orleans
Architect: *Errol Barron/Michael Toups Architects—Errol Barron, partner-in-charge-of-design; Michael Toups, Steve Olson, Dennis Cowart, Cindy Garbutt, project team*
Engineers: *Zehner/Bouchon (structural)*





5

The $3-million building opened in September at a cost of about $107 per sq ft. The first two floors of the building are a concrete-frame structure, while the third floor is framed in steel.

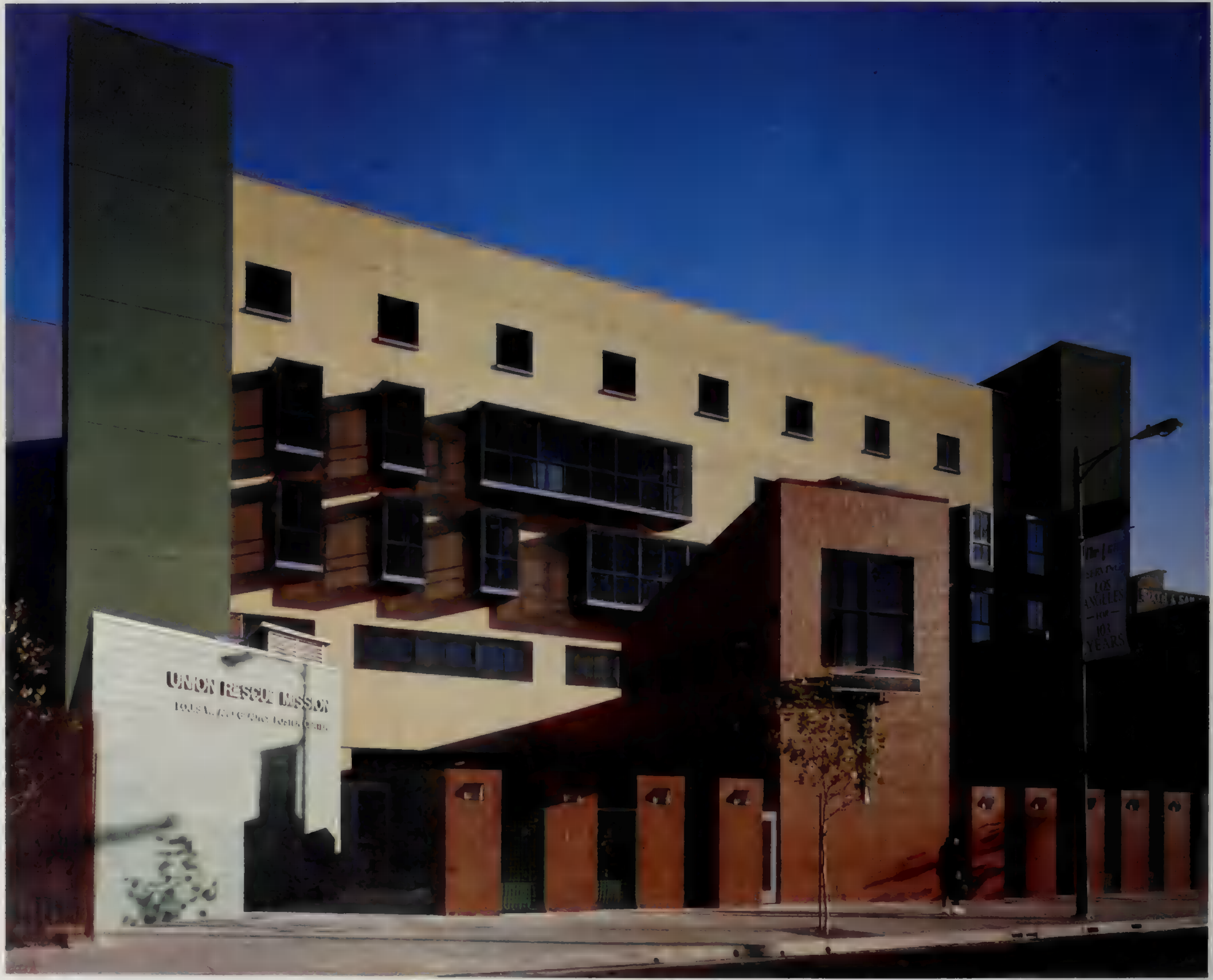
Union Rescue Mission

Los Angeles, California
Nadel Architects

"Our old facility was like a one-lane road out of Skid Row," says Warren Currie, president of the 70-year-old Union Rescue Mission, which was until recently housed in a converted stable. "This new building is a major highway."

Between 1,700 and 2,000 homeless people a day get food in the new structure's massive dining room served by a high-efficiency kitchen on the first floor. They can bathe, and get clean clothes and even a haircut in adjacent separate hygiene areas for men and a smaller-but-growing contingent of women (plan opposite).

Those who join the mission's rehabilitation program ascend through four upper floors housing some 860 beds, medical facilities staffed by UCLA doctors and nurses, detoxification



© John Ford photos

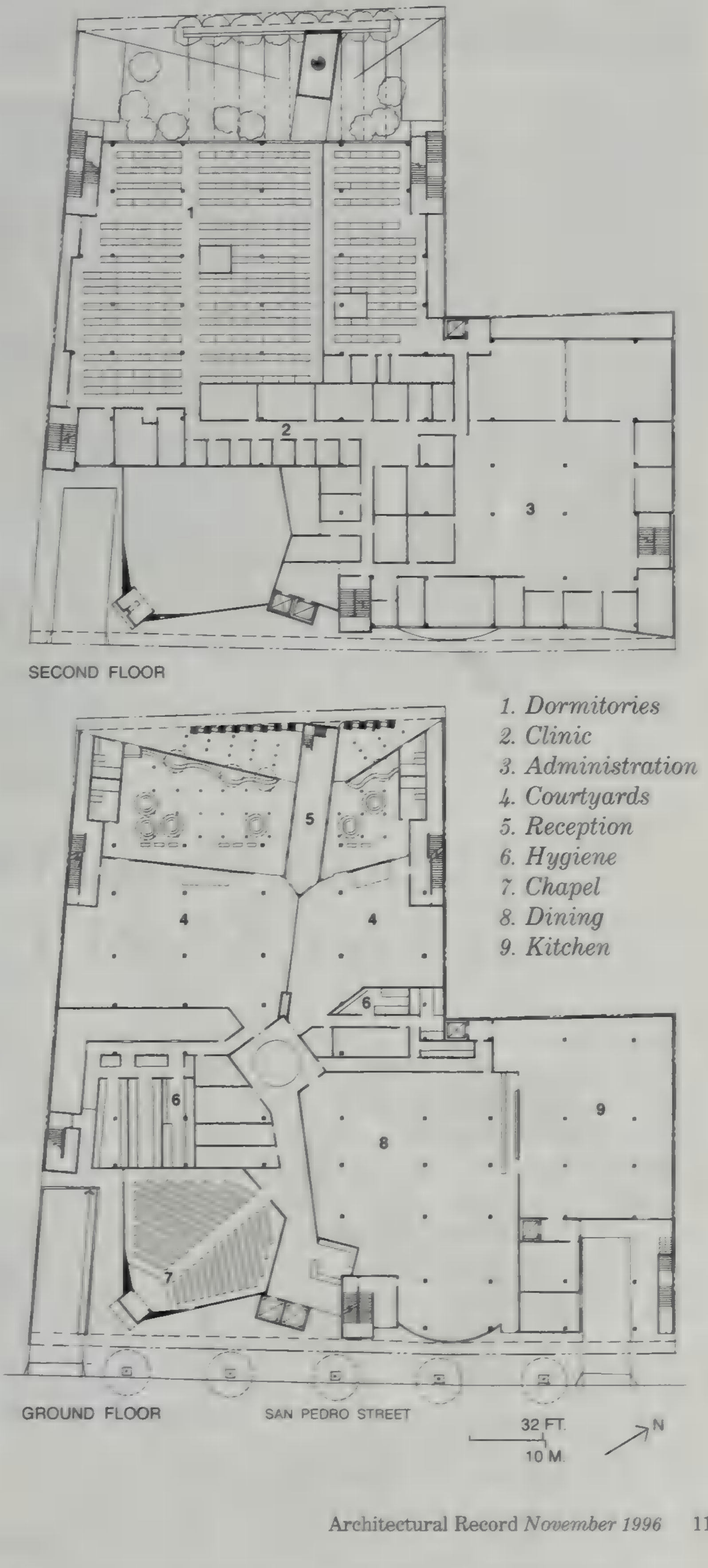
As the transient homeless enter the courtyards—women to the right and men to the left—they pass by a central two-story-high reception area offering both a welcome to those seeking counseling and control of the unruly. The stair towers project out from the building to emphasize its solid character. Eventual plans call for them to be topped with lighted symbolic beacons.

and recovery assistance, and vocational training, until participants reach semi-independent living quarters on the top level of the 235,000-sq-ft building.

The second floor holds dormitories for 450 people, who receive essential medical treatment in an adjacent clinic. Advanced recovery programs for another 282 people take place on the third and fourth floors. Participants sleep in six-bunk rooms and share their own dining facilities.

Entry from the main street, San Pedro, is limited to staff and program members in a concession to adjacent businesses already worried about a high concentration of shelters and subsidized housing in the neighborhood. The large group of transient homeless enter from San Julian Street through courtyards screened from public view by piers of preglazed masonry block (opposite)—a material extending around the base of the concrete-frame building that was substituted for the originally proposed granite in a series of cost cuts to meet the $17.5-million budget.
Charles K. Hoyt

Credits:
Union Rescue Mission
Los Angeles, California
Owner: *Union Rescue Mission*
Architect: *Nadel Architects, Inc.—Jerry Allmand, director of design*
Engineers: *Robert Englekirk Consulting Engineers (structural); Dalan Engineering (electrical); Helfman-Haloosim & Associates (hvac)*
Consultant: *Calvin R. Abe & Associates (landscape)*
General Contractor: *Keeler Construction Company, Ltd.*



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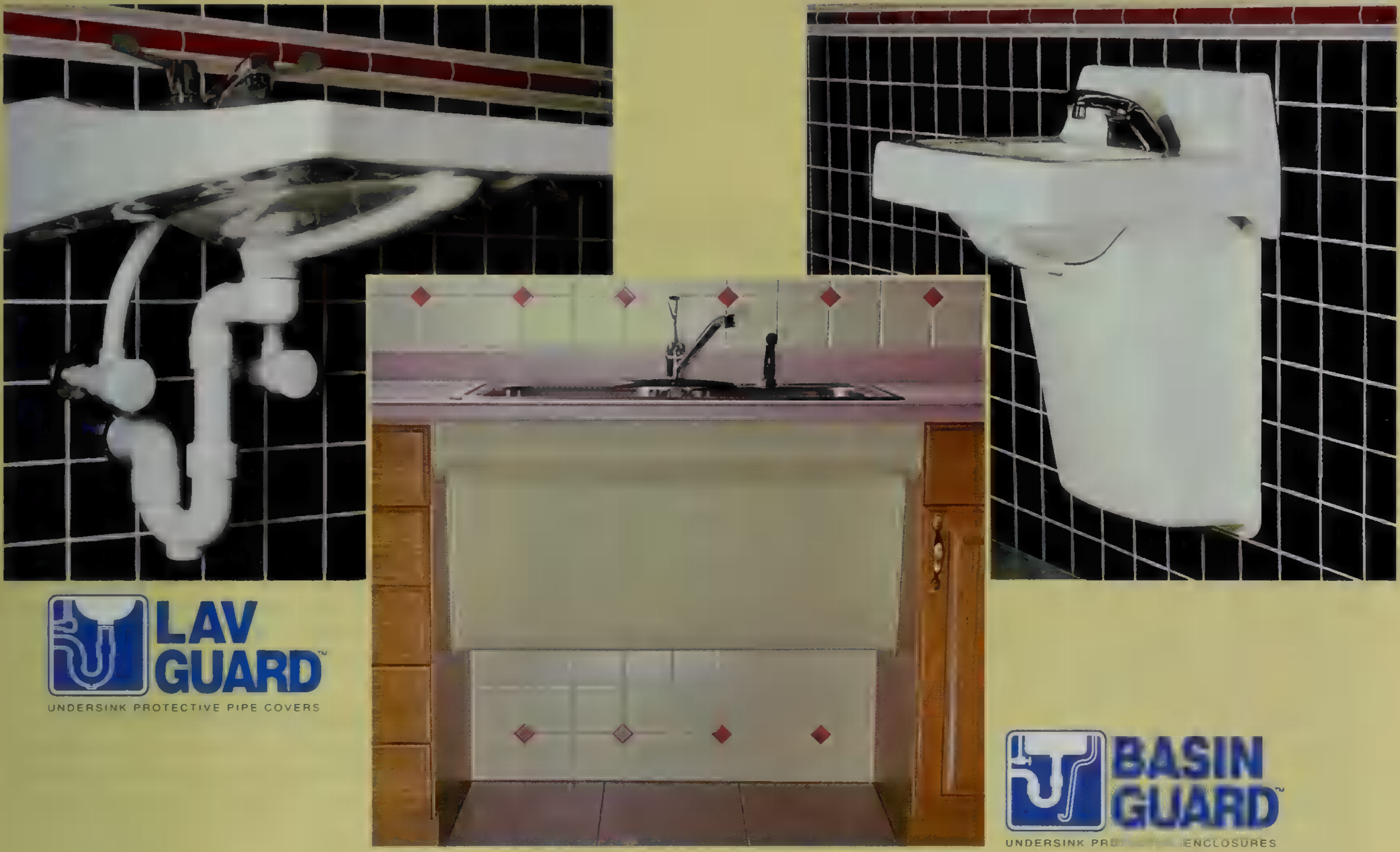

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Outlook *continued from page 37*

The trend should be repeated around the country, Murray says. "Given the improvement in office markets and a national vacancy rate down to 13 percent, we see a stronger percentage increase in office construction in 1997." Still, Pederson says, the majority of such projects will be smaller and in suburban settings rather than skyscrapers in central business districts.

There is still plenty of space available; it's just not what tenants want. Suddenly trendy is large-scale conversion of older and historic commercial properties to new uses, especially housing [RECORD, February 1995, pages 30-35]. Already, in downtowns across the country, such adaptive re-use has expanded well beyond what began decades ago as an artists' housing movement replacing a dying manufacturing base.

Slipping retail

In Denver, for example, several redeveloped older manufacturing and office buildings have created a critical retail mass, featuring crowd-attracting brew pubs and other entertainment-oriented retail. In Manhattan's Wall Street district, city and state tax incentives have spurred heavy interest in the area. Retail grew enormously during the recovery, last year falling just shy of its highest mid-80's volume. Much of the expansion had been in so-called big-box discount super stores for chains like Wal-Mart or Circuit City. But that area is softening.

One emerging area of growth is in the combination under one roof of multiplex theaters and theme restaurants. Successful projects in Dallas and New York City have caught the eye of developers everywhere. Sony Theaters and Planet Hollywood are working on one such project in Michigan, and are looking at other sites. Sony also has an inner-city cinema development program with Magic Johnson that is involved in sites in Los Angeles, Houston, Atlanta, Chicago, and New York. Multiplexes have also been touted as salvation for sagging malls. But since theater attendance is flat, it is hard to imagine that this trend will spread widely.

Indeed, the new interest in once-ignored inner-city neighborhoods by leading retailers suggest that these places are the last under-retailed areas left. Harlem USA, for example, is a 270,000-sq-ft entertainment and retail complex that will house Disney, Gap, and other major retailers.

Such projects may have high impact locally, but they won't offset larger retail trends. "The store market is in a downward pattern," says Murray, "We've already seen this decade's highest level of construction."

Mixed performance for hotels

In 1995 and 1996, hotels showed impressive growth, but it should now flatten considerably over the next two years. Destination resorts, theme parks, and casinos should be the exception to this rule. Regions that were slow to turn around, such as the Northeast, are now coming on strong, notes Murray. Construction should boom in Atlantic City, where some $3 billion in new casino-hotel development is expected through the end of the decade.

There is another important change that is affecting construction spending: the eagerness of lenders to get into the market. After years of freezing out developers, banks and other traditional lenders are doling out dollars, albeit with more caution than they did in the 80's [see market spotlight, page 38.] Although the pace of construction remains dependent on the nation's overall economic performance and health, it is exactly such trends—also linked to real-estate cycles—that alternately cushion and devour investors. ■

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Calendar

Continued from page 6

Denver Design-build Committee. The conference will focus on how architects can better serve their clients in over 30 seminars, workshops, and programs on design-build, construction and risk management, alternative futures in the profession, and information technology and communications. For information, call 202/626-7482.

March 19-21, 1997

WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Ann Videriksen at 310/657-0800, or fax 310/652-8576 for information.

Competitions

◆ Submissions to the biannual Rudy Bruner Award for Excellence in Urban Environment are due Dec. 13. First-prize winner receives $50,000; honorariums of $1,000 go to each of four additional finalists. Contact Bruner/Cott & Associates for an application or more information at 130 Prospect St., Cambridge, MA 02139; phone 617/492-8400 or fax 617/876-4002.

◆ The Gypsum Association is holding an Excellence in Gypsum Board Design and Construction competition; entries are due Dec. 31. Top awards of $3,000 go to each of the winning teams in non-residential and residential construction using gypsum board. Call 202/289-5440 for entry blanks.

◆ The town of Vail, Colo., is holding a juried competition for the design, renovation, and integration of a public-art project in a centrally located plaza. Project budget is $300,000. Deadline for submissions is Jan. 6. Call 970/479-8900 for details.

◆ Entries to the Spectrum International design competition, sponsored by the Tile Promotion Board, are due by Jan. 31. Designers, architects, ceramic-tile manufacturers, and others who have influenced the use of ceramic tile are eligible to enter. There is a grand prize of $2,500 for the most outstanding project, and first prizes ($1,500) and awards of merit ($1,000) in residential and commercial categories. Call 800/495-5900 or fax 561/743-3160 for entry forms.

Correction

The name of the architecture-engineering firm that worked with HLW International on the Ciba-Geigy Laboratory in Tarrytown, NY [ARCHITECTURAL RECORD, October 1996, pages 42-43, 121] was misspelled. The company's name is Sordoni Skanska. ■

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Manufacturers' Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 90-93
Olympic College, Shelton, Washington
The Miller/Hull Partnership, Architect
Standing-seam Zincalume roof: BHP Steel Building Products. Bubble skylights: Plasticrafts. Black-anodized storefront: Herzog Aluminum. Exterior "porthole" doors: Puget Sound Mfg. Co. Upward-acting doors: Overhead Door Co. Glulam roof beams: Manke Lumber Co. Resilient flooring: Armstrong. Pendant incandescents: Holophane. Suspended fluorescents: Linear Lighting (Quietlite 67).

Pages 94-97
Eric P. Newman Education Center
Washington University, St. Louis, Mo.
Cannon-St. Louis, Architect
Composite-metal cladding: A-T-I (Alucobond). EIFS walls and soffits: Senergy. Brick: Taylor Clay. BUR: GAF Building Materials. Curtainwall: Kawneer Co., Inc. Lobby skylight: Kalwall. Entrance: International Steel Co. Ceilings: Armstrong World Industries (Cirrus). Grid: USG Interiors (Donn). Paint: Sherwin-Williams. Fabric wallcovering, stage curtain: DesignTex. Modular carpeting: Interface. Auditorium seating: KI (Piretti). Downlighting: Lithonia. Controls: Lutron. Exterior fixtures: Visa Lighting Corp.

Pages 98-101
H.J.C. Bowden Center for Seniors, East Point, Ga.
Stanley Beaman & Sears, Architecture
Structural steel: Smith Ironworks. Stacked-bond brick veneer: The Belden Brick Co. Curtainwall and storefronts: Vistawall Architectural Products. EIFS soffits: Sto Corp. Single-ply roofing: JPS Elastomerics. Canopy glazing: GE Plastics (Lexan). Tinted and sandblasted glass: AFGD Glass Mfg. Operable partitions: Hufcor. Pavers: Vermont Structural Slate Co. Wood floor: Robbins. Uplights: Elliptipar. Corridor downlights: George Kovacs Lighting. Exterior luminaires: Staff. Dimming: Lutron. Air diffusers: Seiho. Elberton Blue rubble-stone wall: Built by Danny Clack.

Pages 102-105
Northeast Valley Multipurpose Senior Center, Pacoima, Calif.
R. L. Binder Architecture & Planning, Architect
Modified-bitumen roofing: Schuller International. Metal panels: ASC Pacific. Glass block: Pittsburgh-Corning. Skylight glazing: GE Plastics (Lexan). Locksets: Best. Ceilings: Armstrong. Grid: USG Interiors (Donn). Paints: Dunn-Edwards. Downlights: Lithonia. Exterior fixtures: McGraw Edison. Chair lift: American Stair-Glide Corp.

Pages 106-107
Kellogg Conference Center, Gallaudet University, Washington, D.C.
Einhorn Yaffee Prescott Architecture and Engineering, Architect
Over-size brick: Palmetto. BUR: Schuller International. Shingles: CertainTeed (Grand Manor). Windows and skylights: Wasco. Acoustical ceiling and FR grid: USG Interiors. Paints: Glidden. Wallcoverings: Knoll Group. Raised floor: Tate; Nevamar surface. Resilient flooring: Forbo. Fluorescent lighting and dimming controls: Lithonia. Wall washers: Kurt Versen. Exterior lighting: Hydrel.

Pages 110-111
The Training, Resource, and Assistive Technology Center of the University of New Orleans, New Orleans, La.
Errol Barron/Michael Toups Architects
Wood-mold brick: St. Joe. Aluminum windows and storefronts: Kawneer Co. EIFS (third floor): Pleko Products. Modified-bitumen roof: Schuller International. Painted Galvalume roofing: Berridge Mfg. Tinted glazing: Libbey-Owens-Ford. Automatic entrance: Besam, Inc. Locksets, closers, and exits: Yale. Ceilings: Armstrong. Paints: Devoe & Raynolds. Lobby floor: Graniti Fiandre. Resilient flooring: Azrock Industries. Downlighting: Prescolite. Exterior fixtures: Kim Lighting.

Pages 112-113
Union Rescue Mission, Los Angeles
Nadel Architects, Inc., Architect
Glazed block: The Burns & Russell Co. EIFS: Sto Corp. Skylights: O'Keeffe's, Inc. ■

Correction

Sloan Valve's water-management subsidiary, cited in RECORD [October 1996, page 58] should have been published as Sloan Hydronomics. Sloane Valve Co. is located in Franklin Park, Ill. ■

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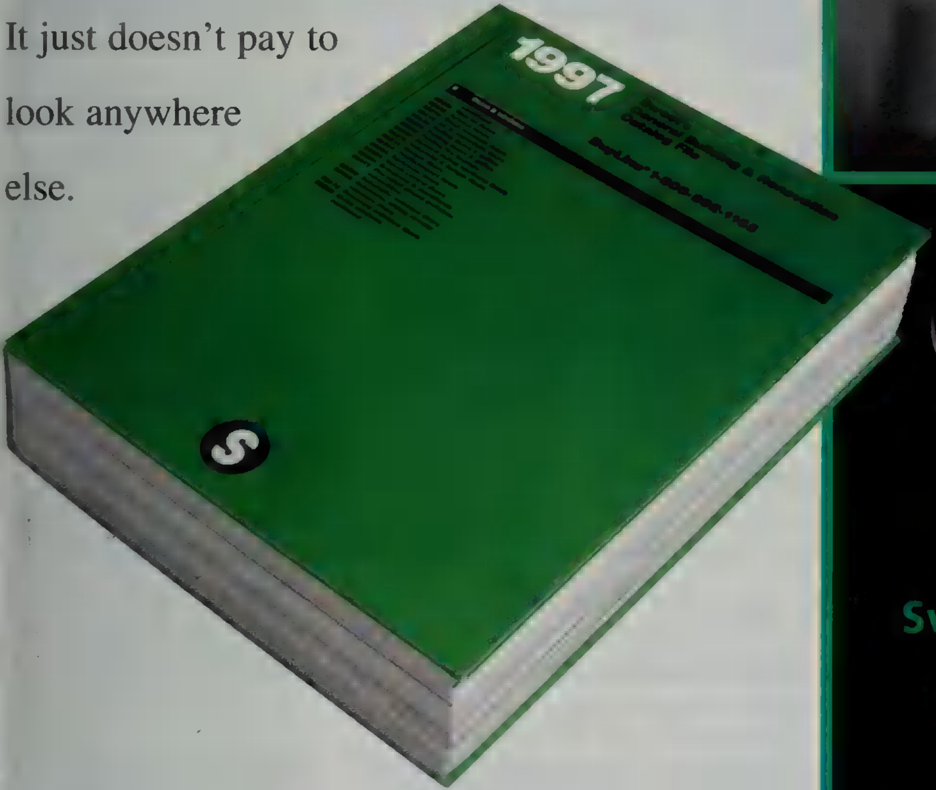

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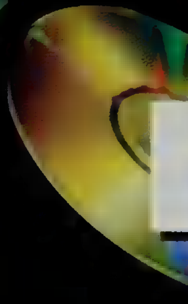

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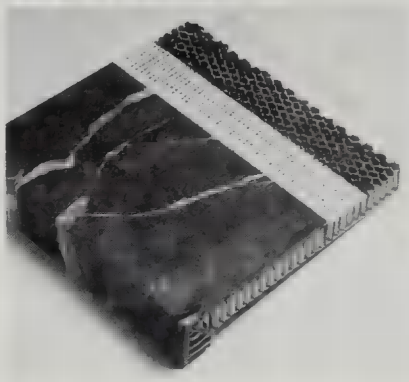
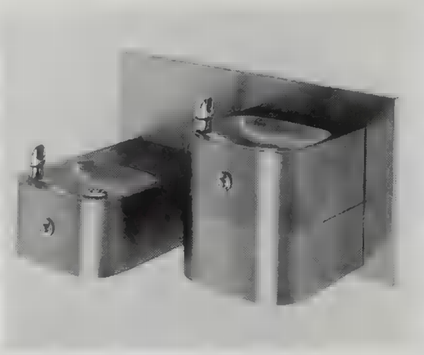
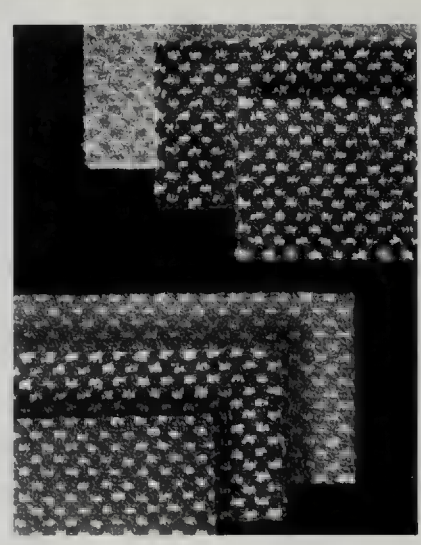


171. Thin-stone cladding panels
Ultra-Lite panels are made with a face of thinly sliced natural stone—granite, marbles, or limestone—bonded to a lightweight aluminum-honeycomb panel using fiber-reinforced epoxy. Cladding has been tested for freeze-thaw resistance, hurricane-force wind loads and impact, and seismic loadings as per rack shear tests; impact-, fire-, and flexural-test data is available from the manufacturer. Weighing about 3.3 pounds psf, panels are said to be particularly suitable for exterior renovation over an existing structure; for elevator cabs; and for marine and aviation interiors. Panels come in large sizes, and can be cut using standard carpentry tools. 800/328-6275. Stone Panels, Inc., Carrollton, Texas.



172. Accessible for all
A new design, Model 1108 drinking fountain combines two one-piece units placed at wheelchair- and walking-height levels. Each component has rounded corners and a curved, smooth skirt attachment that meets ADA "protruding objects" guidelines. Made of No. 4 satin-finish stainless steel, Model 1108 has zero lead in all waterway parts, exceeding the requirements of the Safe Drinking Water Act. Other fountains available in this ADA-compliant "Hi-Lo" configuration offer a Brushed Sterling Vinyl finish option, a new material said to virtually eliminate typical "wear and tear" problems. ADA-compliance data available for all products. 510/525-5801. Haws Drinking Faucet Co., Berkeley, Calif.



173. Wool-blend carpeting
A pattern of light-colored abstract markings set on a solid ground, Prado is a cut-pile construction made of an 80/20 blend of wool and nylon. Durable enough for office and hospitality applications, the broadloom can also be used residentially. Ground-color options include crimson, cornflower blue, sand, spruce green, bark brown, and medium gray. Complete product specification data and sample program offered to design professionals. 800/523-0731. Eurotex, Philadelphia.

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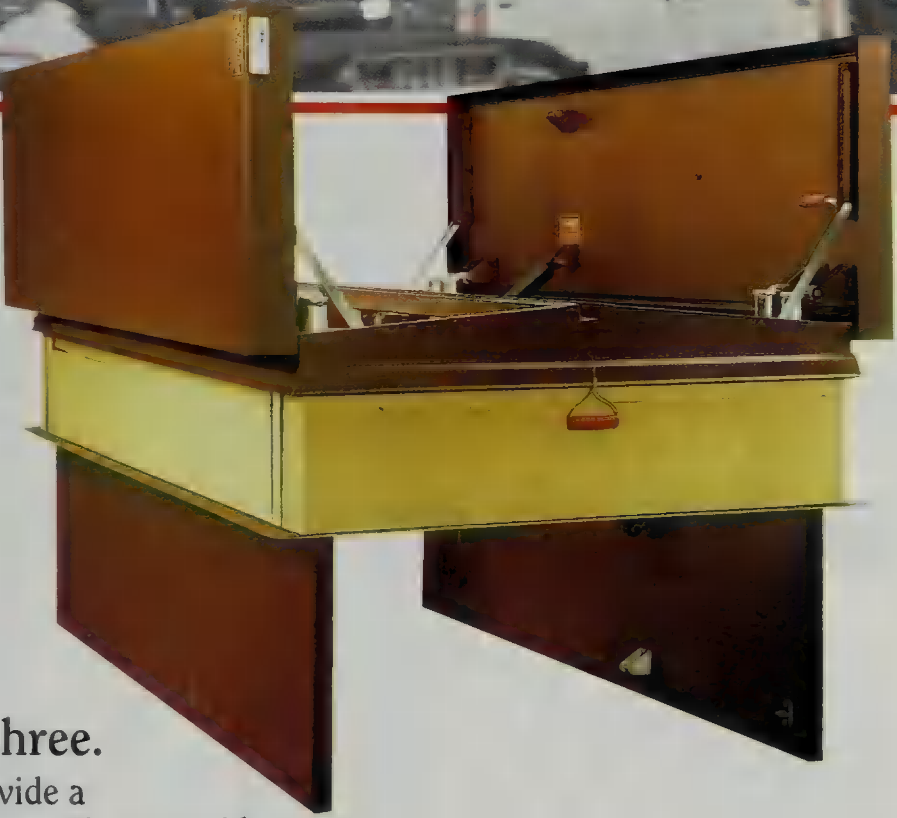

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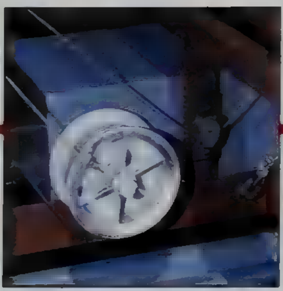

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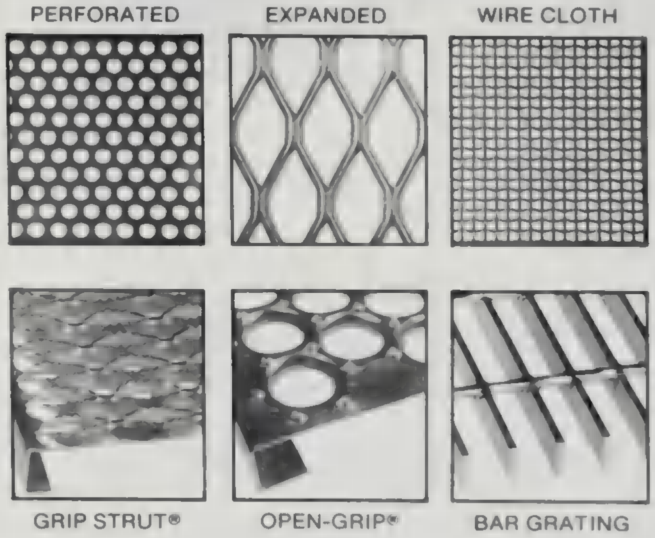

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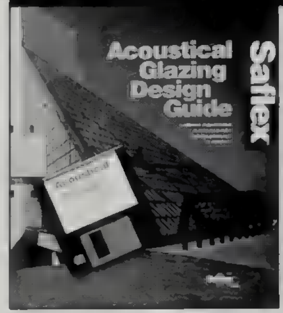
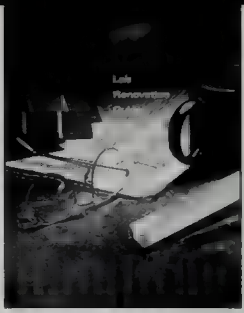
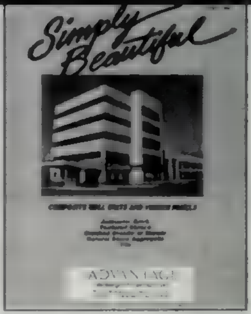


200. Acoustical glazing design
An updated design guide includes a free Windows-compatible diskette to assist in the selection of an appropriate glazing configuration to meet a specific interior noise criterion. Text explains how laminated glass with Saflex interlayer reduces the level of exterior noise passing through windows. 800/248-6844. Monsanto Co., St. Louis, Mo. *



201. Laboratory renovation
Covering concept, plan, purchase, and installation, a 12-page brochure helps facilities managers set up ground rules for upgrading industrial and institutional laboratory spaces. A chart gives pertinent dimensions for equipment such as fume hoods, sinks, and casework. 414/793-1121. Fisher Hamilton, Inc., Two Rivers, Wis.

202. Acoustical ceilings
Product guides, offered without charge to architects and designers, include new *Technical Bulletins for Acoustical Ceilings*, and revised *Architectural Abstracts for Commercial Ceiling Products*. Individual data sheets detail each ceiling product; the *Bulletins* cover fire resistance, light reflectance, and installation. 813/873-4230. Celotex Corp., Tampa, Fla.



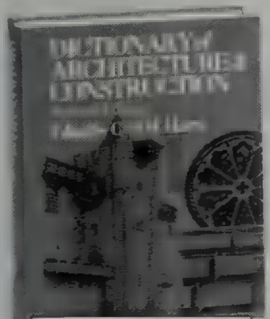
203. Prefabricated cladding
A catalog describes Advantage composite wall units and veneer panels, which offer customized cladding faced with crushed granites, kiln-fired clay brick, textured stucco, and polymer concrete. Delivered to the job site ready to install, the wall can be designed for both curtain-wall or load-bearing use. 800/322-9257. Advantage Buildings & Exteriors, Tulsa, Okla.

204. Solid-surface directions
A 12-page design guide to Swanstone reinforced material shows it used in commercial, institutional, and residential applications, and details installations such as reception counters, showerwalls, baseboards, restroom partitions, and food-prep surfaces. All pertinent test results and code approvals are listed. 314/231-8148. Swanstone, St. Louis, Mo.

205. Reroofing with metal
A brochure explains the life-cycle advantages to reroofing facilities with standing-seam metal systems. Also covered: improved esthetics, energy savings, and reliability. Case studies illustrated include a health clinic, assembly plant, and school gymnasium. Project cost analysis offered at no charge. 800/998-7663. Butler Mfg. Co., Kansas City, Mo. ■

* *Product Data on CAD disk*

For more information, circle item numbers on Reader Service Card.



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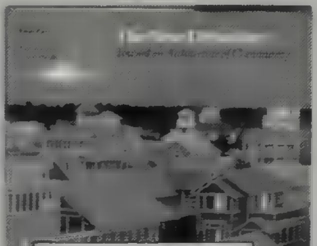

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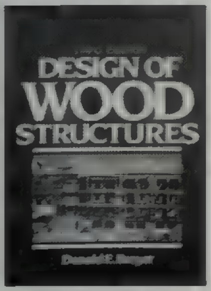

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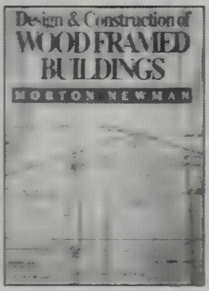

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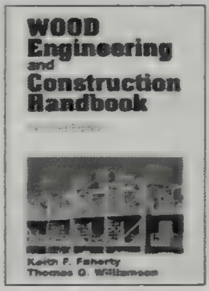

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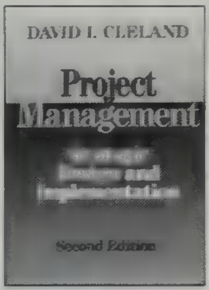

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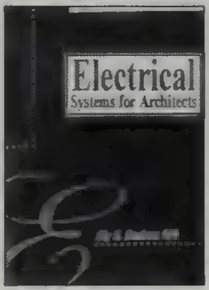

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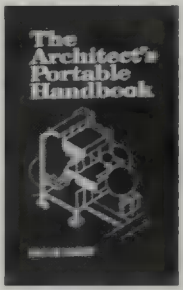

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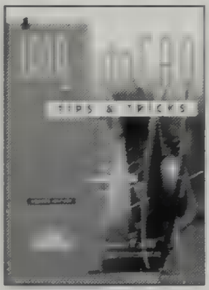

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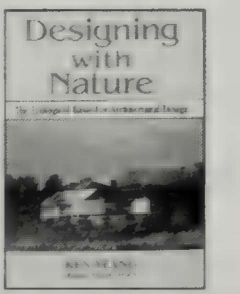

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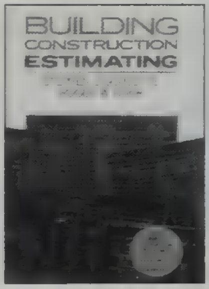

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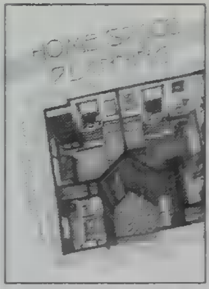

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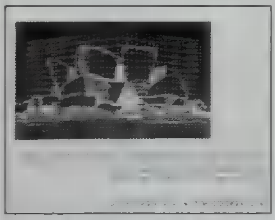

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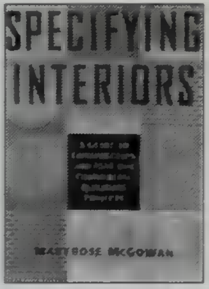

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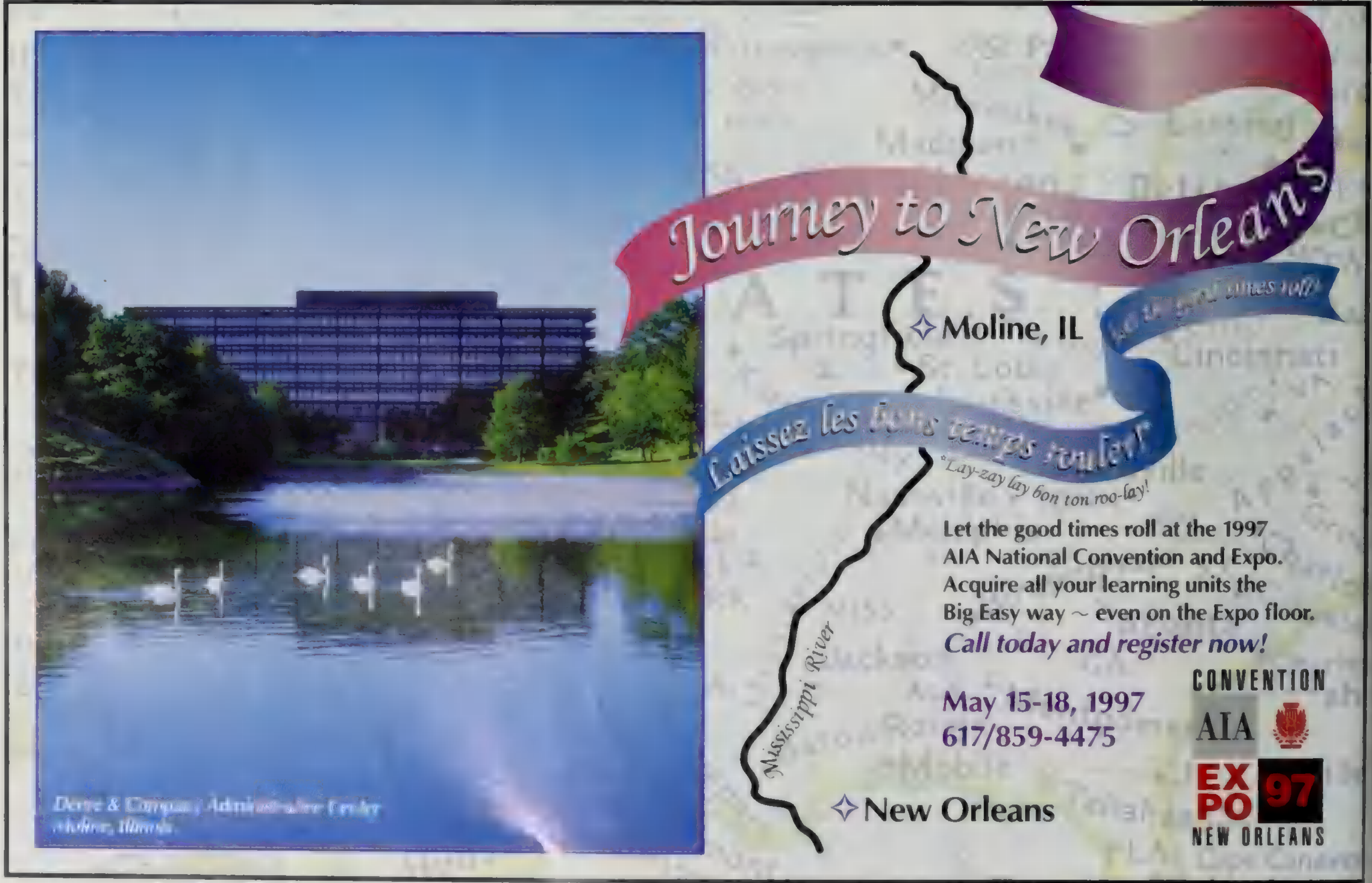

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Infrastructure *continued from page 39*

infrastructure enhancements. And Jane F. Garvey, deputy federal highway administrator, says the U.S. Dept. of Transportation feels enhancements should continue in some form. In focus groups on ISTEA, she says, "Almost to a person, everyone says they'd like to see the program continue." She says the debate is now whether a specific funding amount is set aside for enhancements or whether enhancements are simply defined as "eligible" for funds transfer. DOT hasn't taken a position.

Airports ready for takeoff

Airport work long has been an active field for architects. Now, with continued passenger growth and a need to upgrade aging facilities, "It seems like the next wave, if you will, of fairly significant projects is on its way" in the United States and overseas, says Pat Askew, senior vice president and director of aviation facilities for Hellmuth, Obata & Kassabaum (HOK), St. Louis. Paul Reinarman, a principal at Spillis Candela & Partners, Coral Gables, Fla., says, "We see continued expansion, particularly at the larger airports." For example, Spillis Candela is working on elements of Miami International Airport's $3-billion-plus capital program. That plan will include expanding the 3.75-million-sq-ft terminal and concourses to 8.75 million sq ft. Askew rattles off cities like Anchorage, San Diego, Salt Lake City, and Fort Lauderdale that have airport improvement plans in the works.

The largest airport-funding source is the bond market. Last year, aviation-bond issues totaled $4.6 billion, up 6 percent from 1994, but below the recent high of $7.2 billion in 1992 (chart page 39). Federal Airport Improvement Program grants also contribute. Congress recently lifted a cloud over those grants, but only temporarily. It reinstituted taxes that flow into the Airport and Airway Trust Fund, which finances the grants and other Federal Aviation Administration programs. The taxes expired at the end of 1995 and the fund's surplus had been falling. However, the renewal only lasts through the end of December. The new Congress will have to revisit the issue.

The key for airport-terminal projects, Askew says, is revenue from the passenger facility charge (PFC). These $3-per-trip fees that many airports tack on to travelers' air fares brought in more than $1 billion last year. PFCs have "added an element of stability" to those projects, which otherwise would have to rely on fees charged to air carriers.

Still, the airline business in the deregulated era has been volatile: even big names like Eastern are no more. Future changes in the industry lineup could affect airport infrastructure plans. But Askew thinks aviation planners are more realistic now than in the past. "It's not: build it and they'll come," he says. "It's build it . . . after they've decided to come." ■

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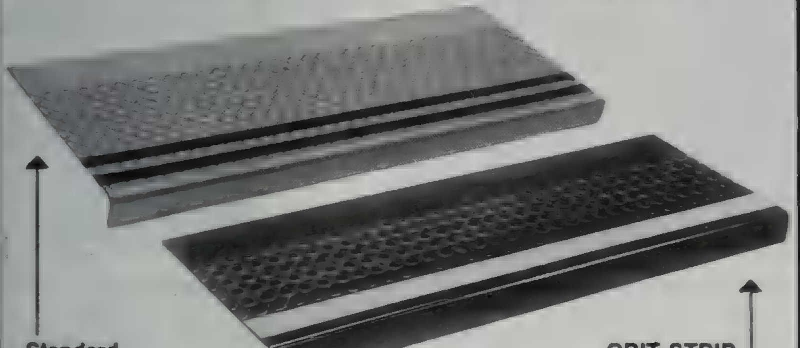

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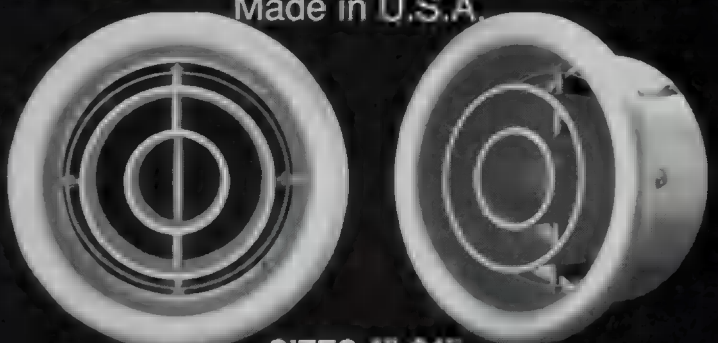

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Manufacturers' Spotlight

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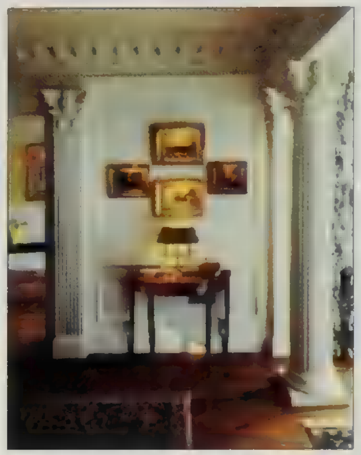

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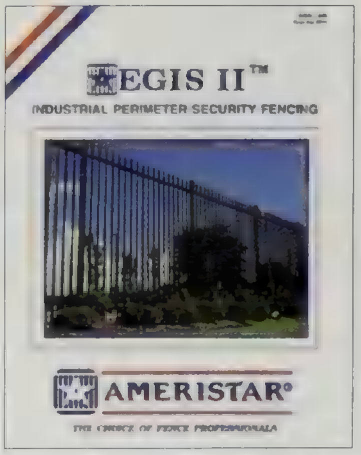
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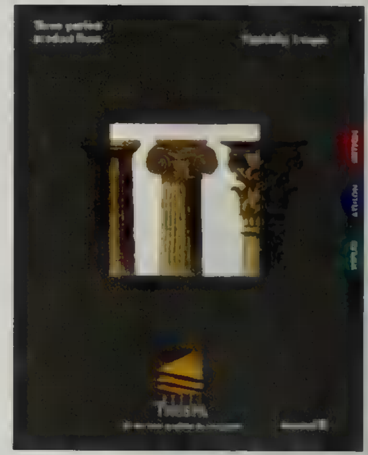

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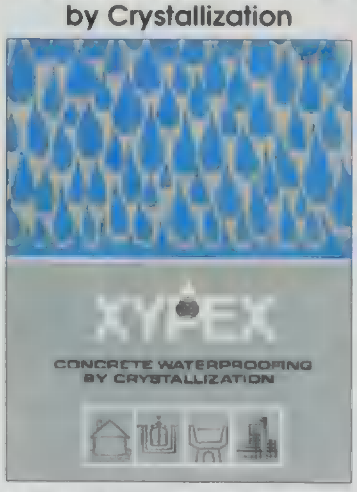

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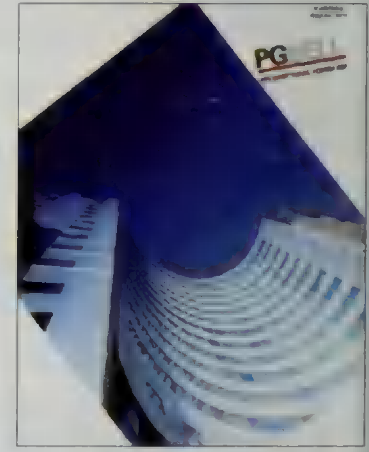

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Manufacturers' Spotlight

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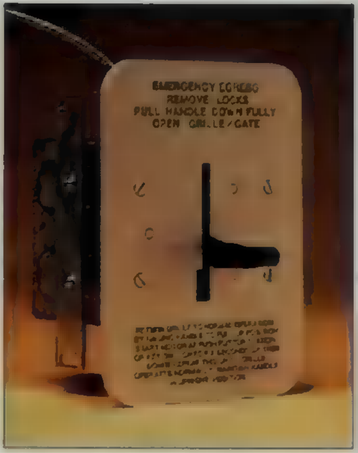
Atlas ADA Product



Atlas Door "ADA Panic Release Device" is engineered to allow emergency egress control on Atlas motor-operated rolling products. The panic release device is equipped with a pull handle on the outside of the box, making it easily accessible to handicapped individuals. Call 800-959-9559

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Raymond Enkeboll

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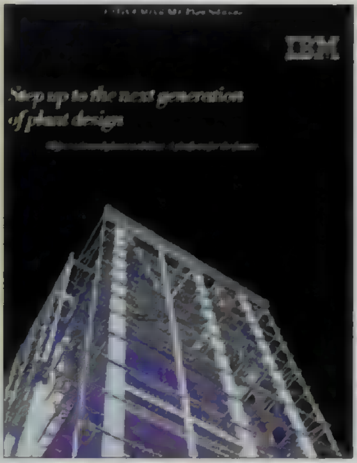
IBM CATIA/CADAM Solutions



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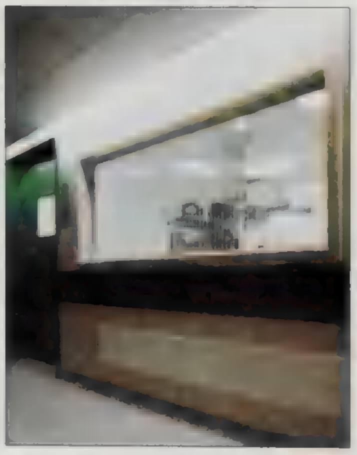

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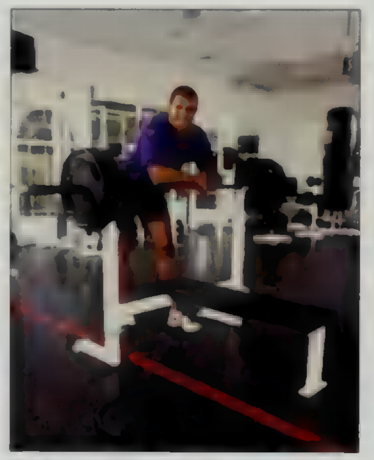

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Duraflake

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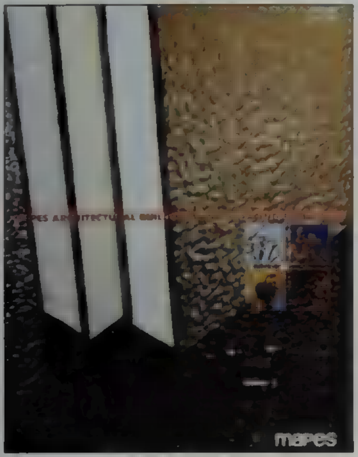
Manufacturers' Spotlight

Graffiti Proof Panels



Mapes Industries manufacturers a complete line of architectural panels with a graffiti proof finish of porcelain enamel. The panels are available in both porcelain on aluminum or steel in a wide variety of colors. The panel applications include window replacement, curtain wall, soffit and ceiling projects. The panels are an ideal solution for high traffic/abuse areas such as schools and institutional buildings. For a free sample to test, please

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Mapes Industries, Inc.

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Gerbert Limited

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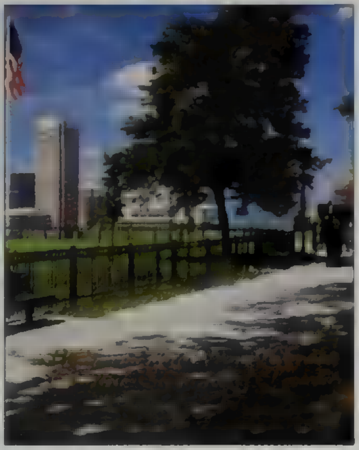
Monumental Iron Works



Ornamental picket fence and gate systems from Monumental Iron Works feature all galvanized steel that is powder coated in 5 standard colors. (Special colors upon request are slightly higher.) These are the most specified and the most architecturally correct ornamental picket fences and gates made today because they emulate the styles and quality of fencing built a century ago. For a free 36-page brochure. Call 410-633-6500 or Fax 1-800-239-2963, 6500 Eastern Ave., Baltimore, MD

Monumental Iron Works

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Copper Development

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Lindgren RF Enclosures

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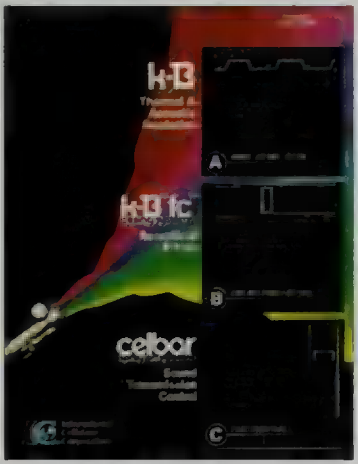
Thermal & Acoustic Insulation



The **K-13**® line of spray-applied insulation provides a versatile and effective solution to virtually all acoustical, thermal, aesthetic and lighting design problems. In new construction and renovation, **K-13** is customized to your requirements, providing you with optimal performance. For over 30 years, **K-13** products have been improving interior conditions for prisons, schools, churches, sports arenas and many other building types. Call **800-444-1252** for more information.

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AIA/Architectural Record Continuing Education

This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education Series discusses acoustics and open office design. Use the following learning objectives to focus your study. After reading the article (pages 54-57), complete the questions below and check your answers (page 134). AIA members may fill out the self-report form in this issue (page 134) and send it in for two AIA Learning Units.

Mark Scher
AIA Director of Continuing Education Programs and Products

Learning Objectives:

After reading the acoustics article and completing the exercises, you will be able to:

- Describe how acoustics and layout considerations are affected by new trends in office design.
- Summarize the major acoustical categories and identify these classifications with design applications.
- ◆ Differentiate between STC, NRC, AC, and AI product-sound rating systems.

QUESTIONS:

1. Outline a typical open-office system sound-masking arrangement with attention to placement and volume.

Answer 1. ______________________________

____

2. Select the acoustical class that categorizes each of the following:
a. Multi-media center with VCRs, computers, and audio centers;
b. Human resources testing center;
c. Large space for shareholder or all-staff meetings and parties;
d. Conference room for hosting five- to 15-person meetings.

Answer 2.
a. ______________ **b.** ______________
c. ______________ **d.** ______________

3. What is wrong with the following statement? "A kitchen design calls for materials with acoustical properties with an NRC rating of .7 and an articulation class rating of .05 plus or minus .01 tolerance."

Answer 3. ______________________________

____

4. What are four interior design-based solutions that may psychologically mitigate negative perceptions about open-space cubicles?

Answer 4.
1.______________ **2.** ______________
3.______________ **4.** ______________

5. Though many workers prefer private offices, why are some clients lowering partitions, increasing group areas, and raising noise levels?

Answer 5. ______________________________

6. What are the four sound transmission rating systems? Used where?

Answer 6.
1.______________ **2.**______________
3.______________ **4.**______________

For answers and self-report form, turn to page ***134***

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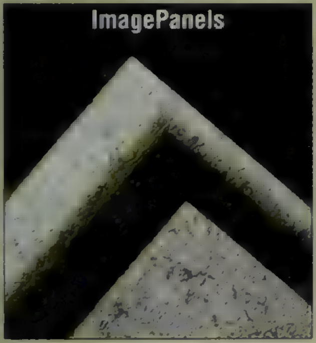
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- Custom color combinations
- Tough abuse resistant surface
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Kerfed Wall Panels

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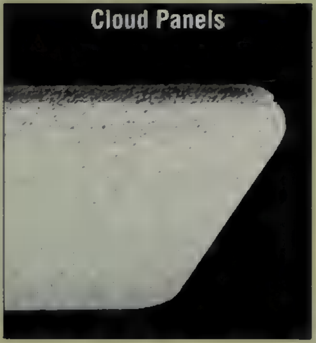
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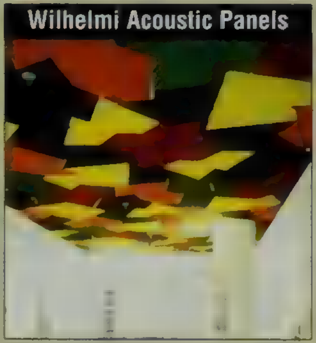
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TECTUM INC. Since 1949

For information on this complete line – or an architectural presentation, call 614.345.9691.

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AIA/Architectural Record Continuing Education

Questions on page 133

Answers:

1. The article describes a system of speakers on 14- to 16-inch centers hanging from the structural deck above the ceiling, pointing upward and broadcasting white noise at a volume consistent within two decibels throughout.

2.
a. Class III privacy area for audio/visual seclusion
b. Class I and II area for confidential privacy
c. Class V loud, interaction group area
d. Class IV semi-private area for small groups

3. Normally, a kitchen is not a quiet environment and does not require the stringent speech privacy indicated by high NRC and articulation class ratings of .7 and .05 respectively.

4. Create a luxurious setting with the following:
a) rich wall coverings
b) subdued lighting
c) soft coloring
d) tall panels for visual screens

5. Open offices assist collaboration and team-building work. They may also offer more light and fresh air.

6. Sound Transmission Class (STC) rates products such as door assemblies and stud walls on their ability to reduce sound intensity. Noise-Reduction Coefficient (NRC) measures the sound absorption of products, but also looks at how much sound reflects back into a room. Articulation Class (AC) measures the absorption of the human voice and sound transmission over partitions and ceiling plenums. Articulation Index (AI) rates speech and sound transmission in real-world situations, duplicating open offices rather than focusing only on specific component performance.

Self-Report Form below

AIA/CES Self-Report Form (FOR ARCHITECTURAL RECORD USE ONLY)

Member information:

LAST NAME FIRST NAME MIDDLE INITIAL OR NAME

AIA ID NUMBER

Program/project title: **Architectural Record: "Is There a Quiet Place in the Alternative Office?" (11/1996)**

Completion date: ______ /______ /______
MONTH DAY YEAR

Quality Level (QL) of this program: This article will give you a total of 2 LUs at Quality Level 2

Quality Level for this article is 2. (Refer to learning objectives on page 133). **Material resources used:** Journal article.

THIS PROGRAM ADDRESSES ISSUES CONCERNING THE HEALTH, SAFETY, OR WELFARE OF THE PUBLIC.

I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

SIGNATURE DATE

Send completed form to:

University of Oklahoma, Continuing Education AIA/CES, Room B-4, 1700 Asp Avenue,

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POSITIONS VACANT

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Cornell University

The Department of Architecture is seeking candidates for the following tenure-track positions:

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Candidates must have a post professional degree and be qualified to teach architectural design as well as courses in another area of the curriculum, such as building technology, architectural theory, professional practice, visual studies. Appointment criteria will include previous teaching experience and advanced degrees. Teaching, administrative responsibilities, design practice and/or research and scholarly activities are obligations of this position. Send letter of application, curriculum vitae to: Professor Andrea Simitch, Design Search Chair, Department of Architecture 143 East Sibley Hall, Cornell University, Ithaca, NY 14853-6701. Applications will be accepted beginning November 1 until the position is filled.

Assistant or Associate Professor of Architectural Technology (Environmental Controls)

Candidates must be qualified to teach in the following areas: lighting, acoustics, passive solar, and mechanical systems. In addition to teaching required undergraduate courses in the areas listed above, the position requires developing and teaching advanced elective courses in related areas: serving on undergraduate and graduate thesis committees; participating in design studio reviews; research/scholarly work; and administrative committee responsibilities. Candidates will be evaluated according to the following criteria: previous teaching experience, professional degrees at the graduate level, professional experience in the areas listed above, and research/scholarly work.

Screening of applications will begin December, 1996 and will continue until the position is filled. Submit letter of application, curriculum vitae, and a brief statement outlining your teaching and research/scholarship objectives to: Architectural Technology Search Committee, Department of Architecture 143 East Sibley Hall, Cornell University, Ithaca, NY 14853-6701.

Assistant or Associate Professor of History of Architecture and Urbanism

We seek specializations that will complement existing faculty scholarship and teaching in 17th-20th century European and Northern American architecture and urbanism as well as in theory and criticism. Applicants with additional interests in non-Western areas are encouraged to apply.

The Department of Architecture which maintains programs on-campus and in Rome at the Palazzo Massimo offers these degrees: B.Arch and M.Arch in design MS in computer graphics, and BS, MA, and PhD in the history of architecture and urbanism. The position requires teaching at undergraduate and graduate levels. PhD, scholarly publications, and teaching experience are required.

Application review begins January 15, 1997. Submit letter of application, curriculum vitae, names of three references, and a brief statement outlining teaching and research/scholarship objectives to: HAU Search Committee, Department of Architecture,143 East Sibley Hall, Cornell University, Ithaca, NY 14853-6701.

For all positions, appointments are expected to begin Fall 1997, rank and salary will be commensurate with experience.

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University of Oregon Head of Department of Architecture. The School of Architecture and Allied Arts at The University of Oregon invites applications and nominations for the position of Head of the Department of Architecture. The position will be available beginning August 1, 1997. Responsibilities: The head is responsible for the administration of the academic disciplines of architecture and interior architecture; administration of personnel including faculty recruitment, course staffing, evaluations and promotions, outside relations including liaison with school, university and professional organizations; development of financial resources and budget administration; and classroom teaching. Qualifications: Desirable attributes include a terminal degree in architecture, substantial teaching and administrative experience, professional experience or research of distinction, and an ability to work constructively with others. Appointment process: Evaluation of candidates will begin January 13, 1997, and continue until the position is filled. For an expanded position description and conditions of the appointment, please contact the school. Applications: For additional information and application requirements, send letter of interest to: Professor Richard Mowday, Search Committee Chair, Dean's Office, School of Architecture and Allied Arts, 5249 University of Oregon, Eugene, OR 97403-5249. The University of Oregon is an AA/EO/ADA institution committed to cultural diversity.

THE UNIVERSITY OF MICHIGAN

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The Architecture Programs in the College of Architecture and Urban Planning are continuing to seek applicants who are qualified for tenured and tenure track appointments for its faculty. Positions are available for candidates who are able to demonstrate that they have advanced academic degrees and professional experience in Structural Design. Additional experience in Professional Practice and Computer Aided Design would be of particular interest.

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Interested applicants for tenured/tenure-track positions should send a full curriculum vitae, statement of teaching and scholarly interests and the names of three references. Dossiers and interviews will be requested of qualifying candidates.

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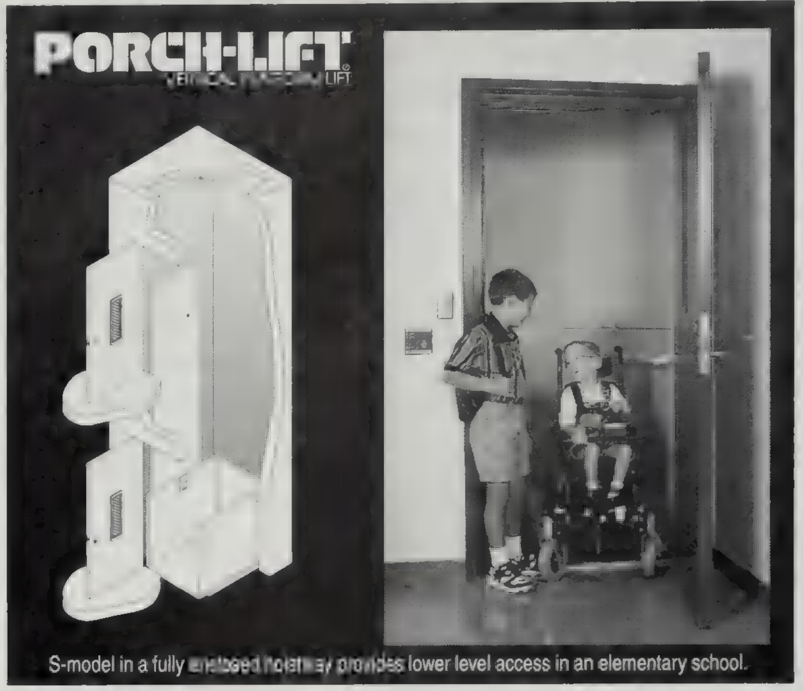

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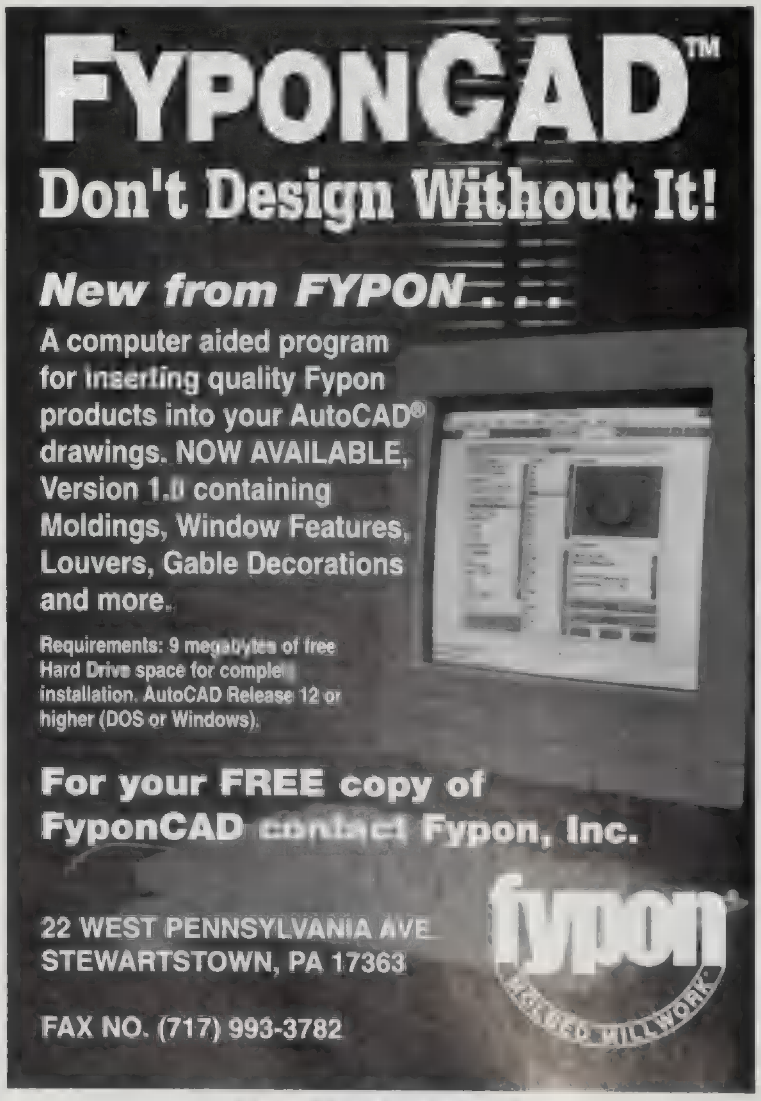

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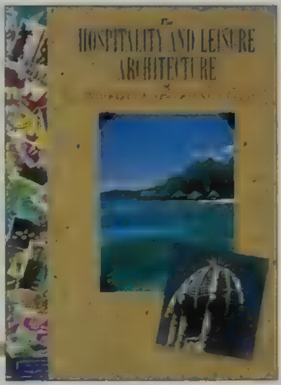

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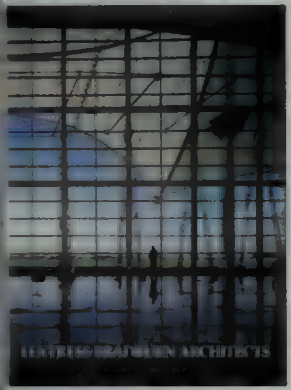

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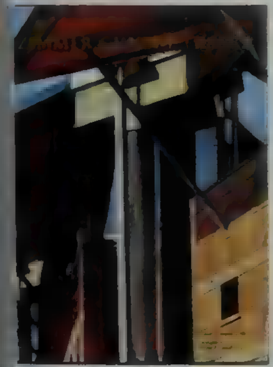

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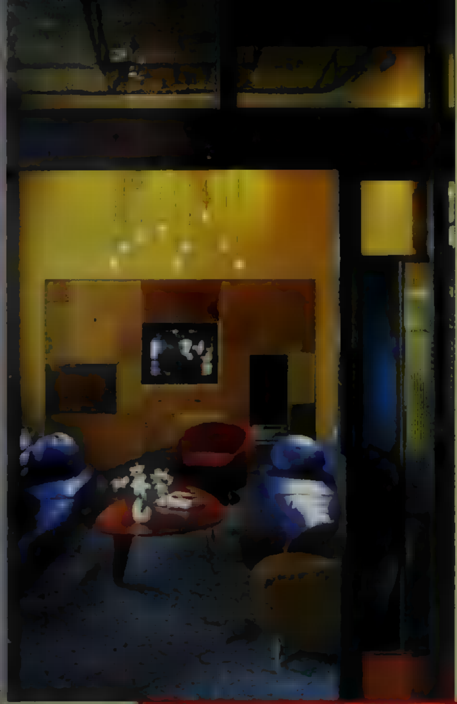

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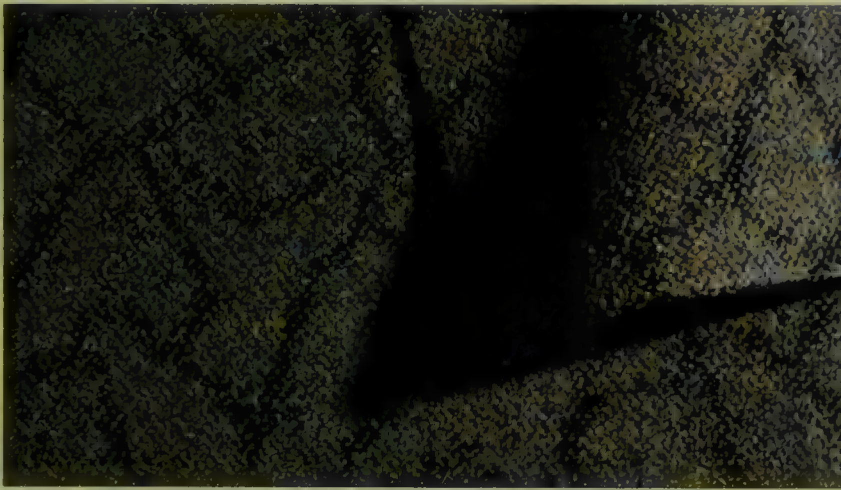

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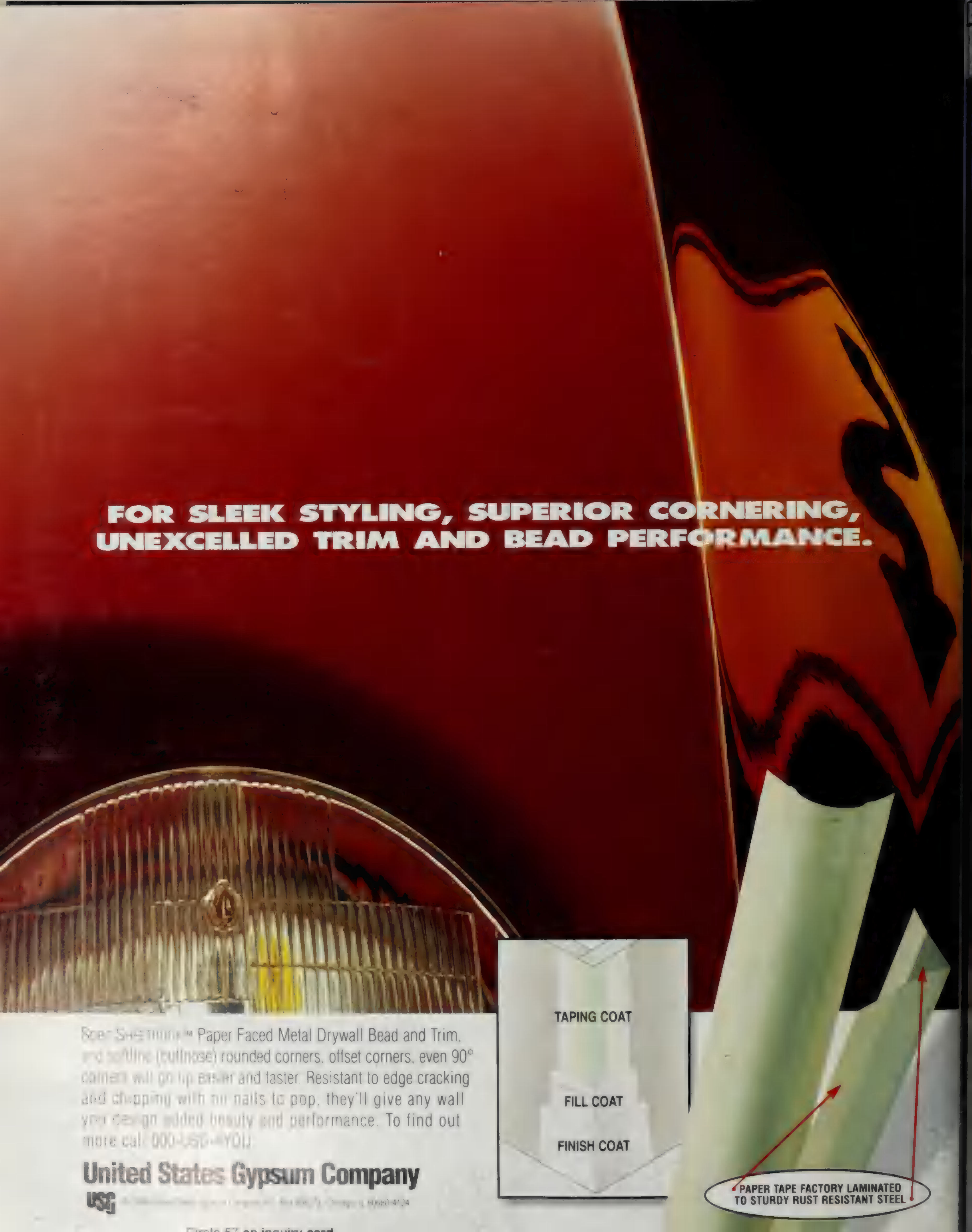
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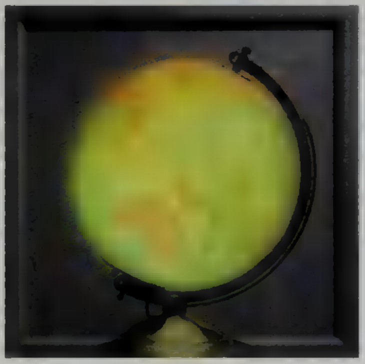
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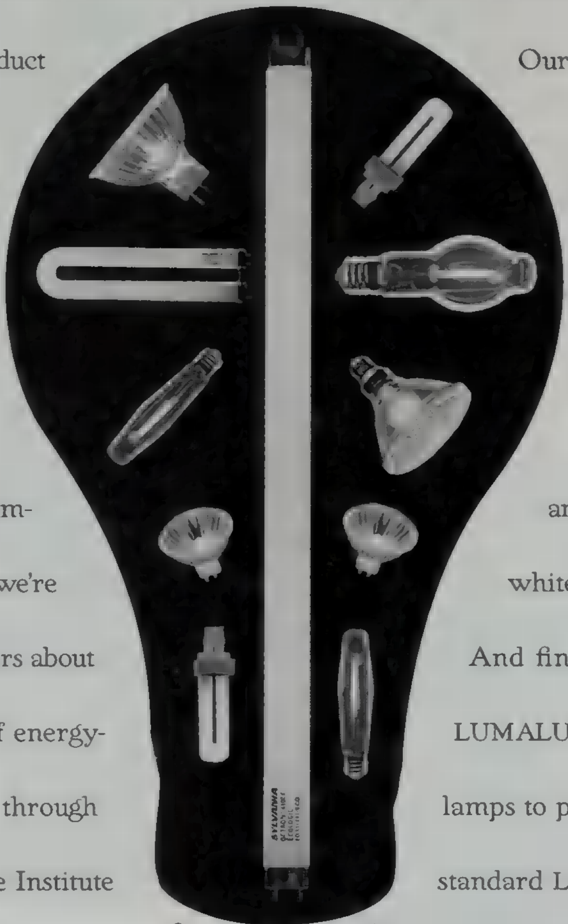
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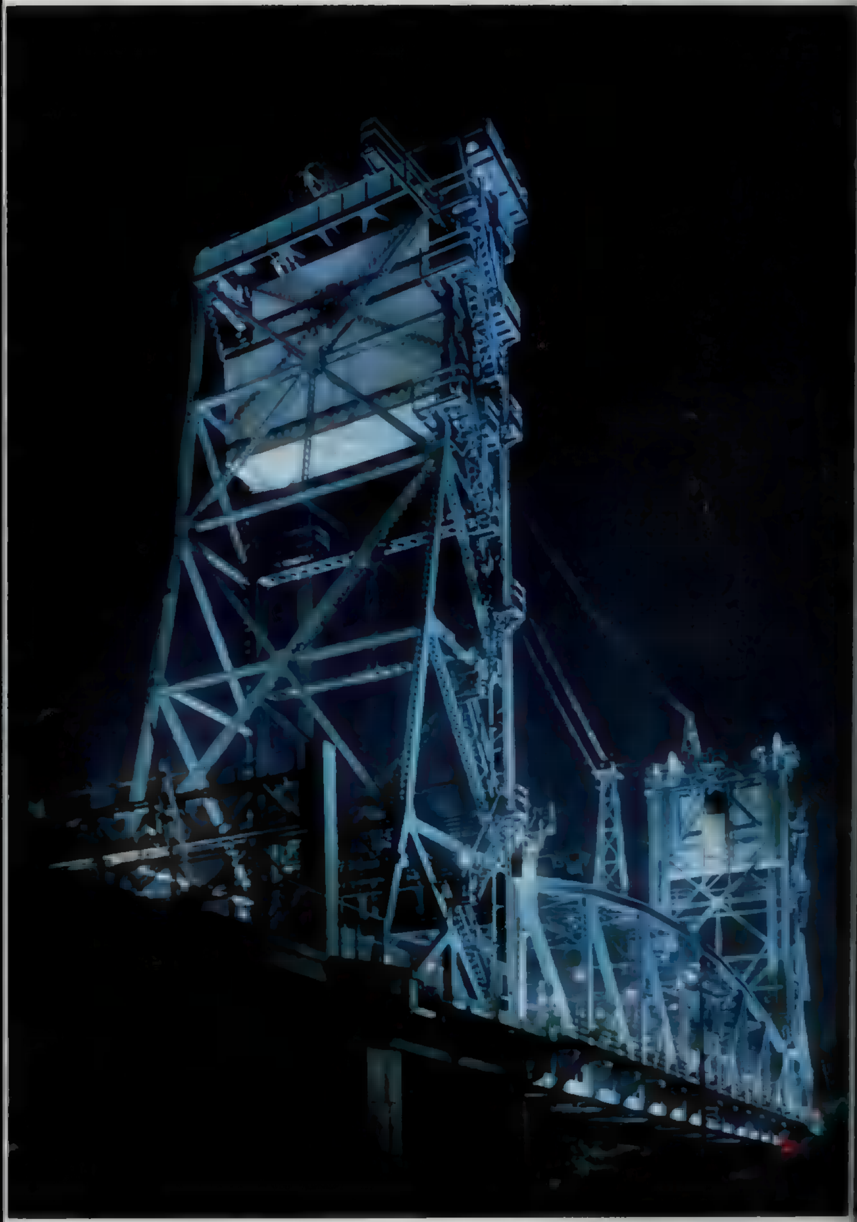

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Cover:
Ford Centre for Performing Arts
Moshe Safdie Associates, Architect
Suzanne Powadiuk, Lighting Design
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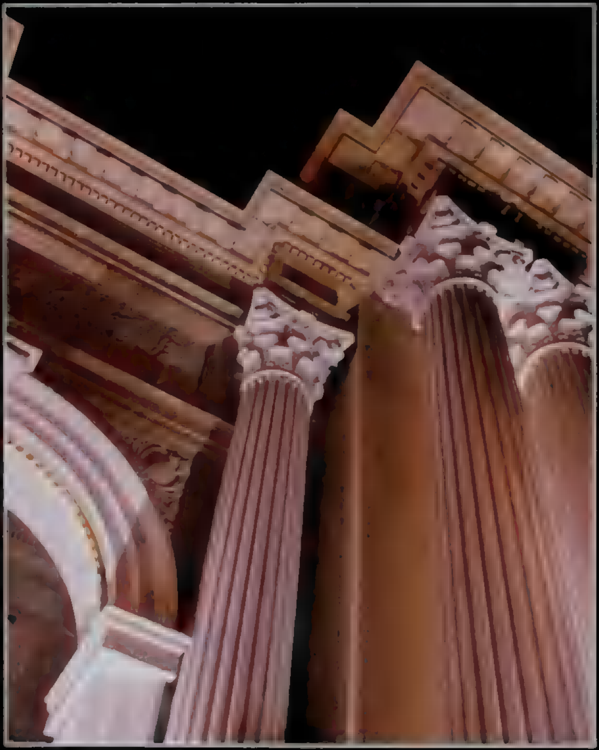

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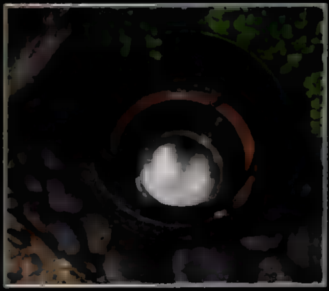

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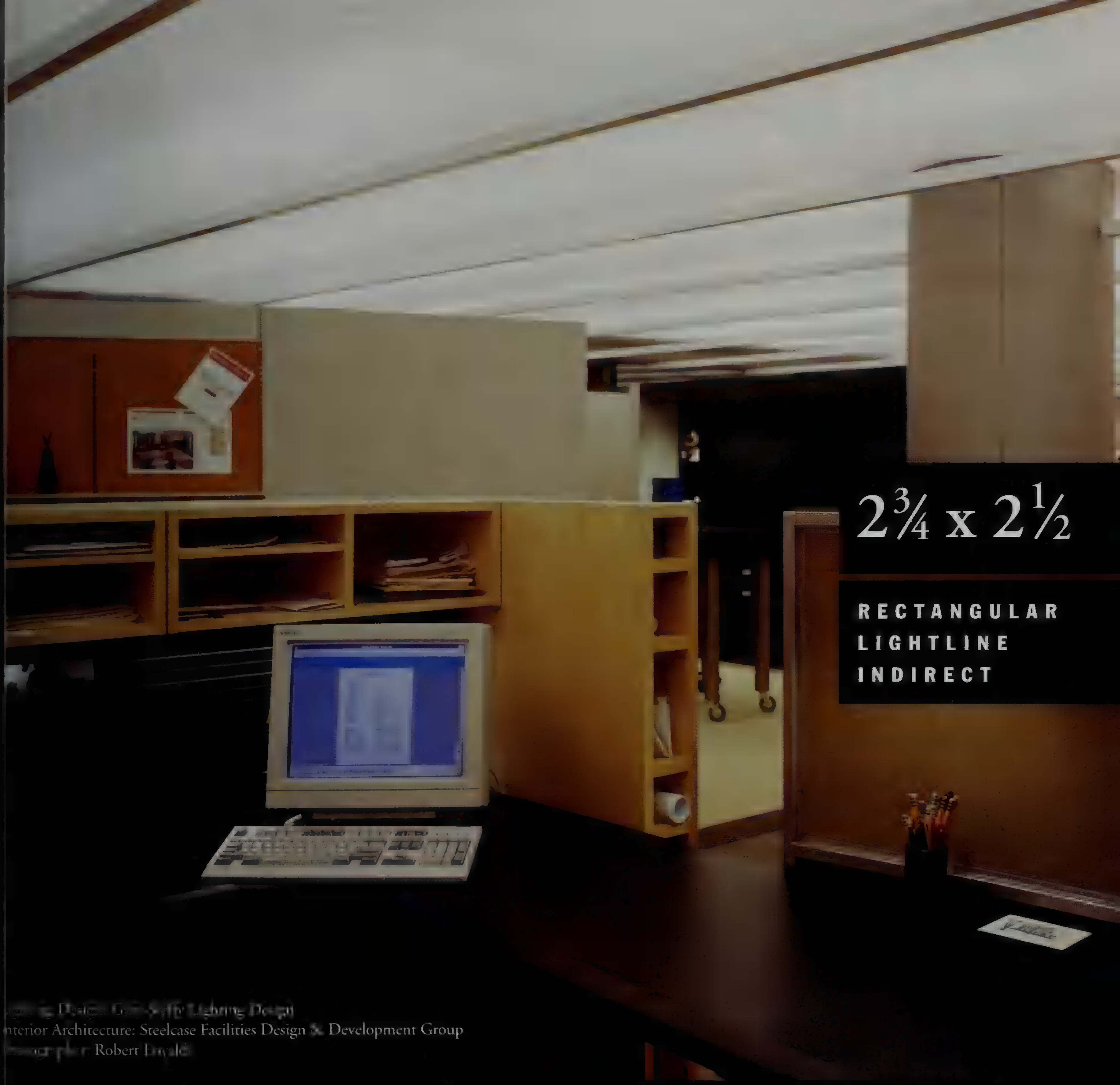

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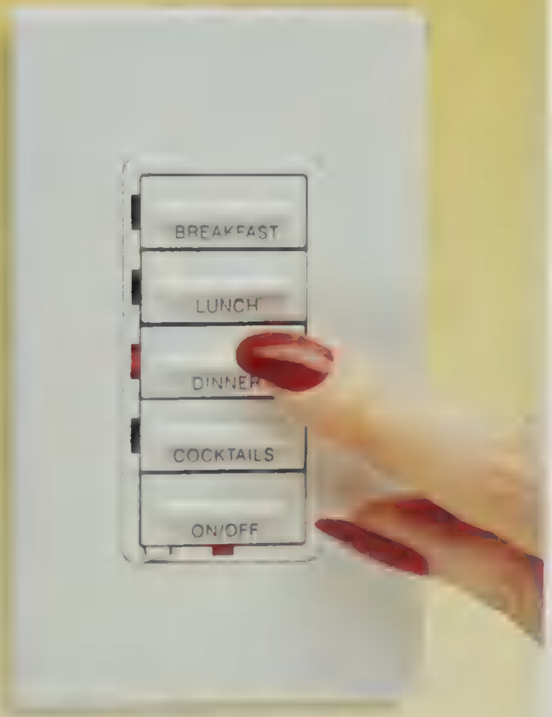

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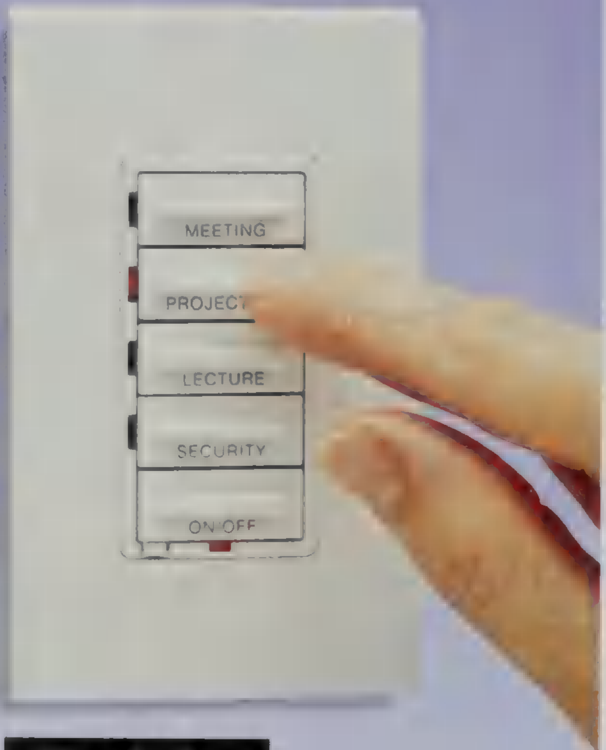

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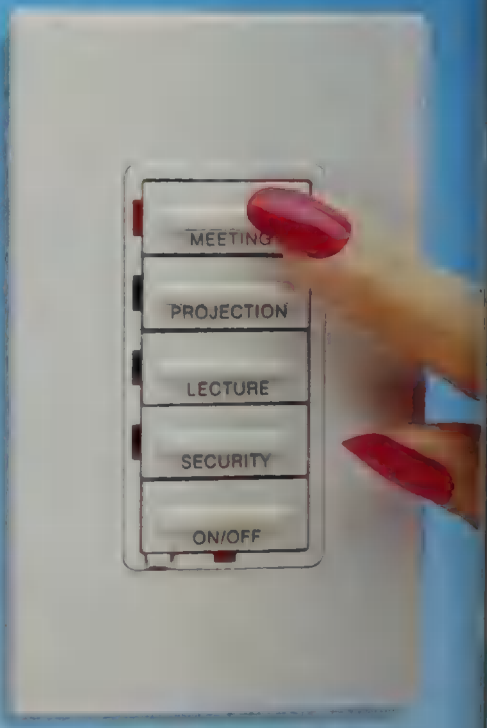

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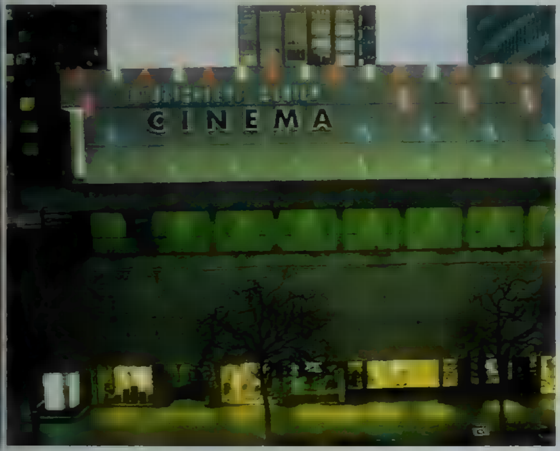
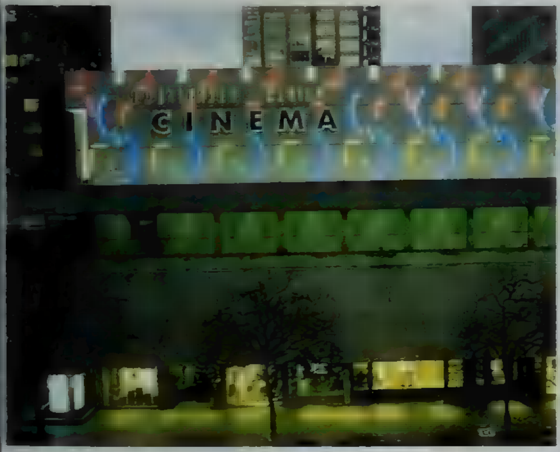
San Francisco

Neon Enlivens the Embarcadero

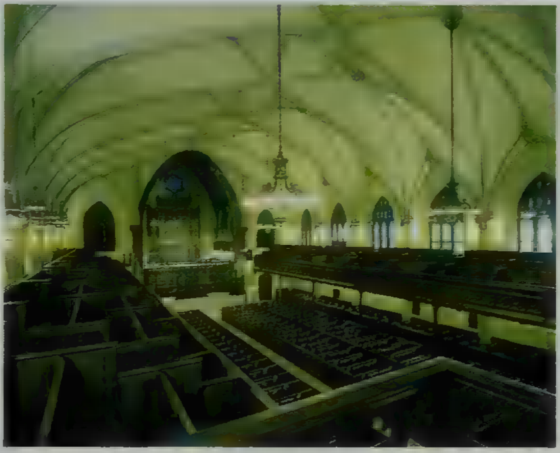


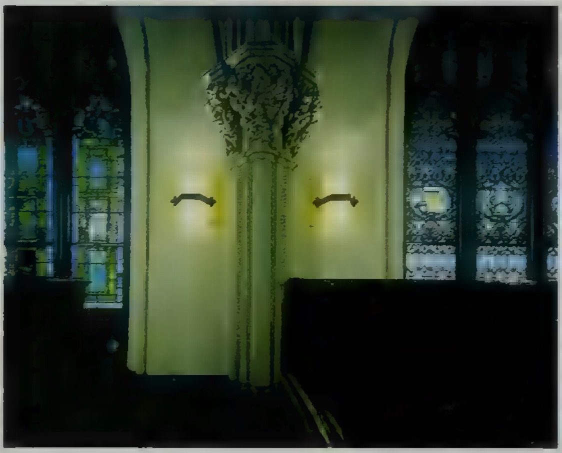


Debra Nichols Design embellished the new Embarcadero Center Cinema with a sign of neon shapes, continuously reconfigured into over 40 preprogrammed patterns. ELS/Elbasani & Logan Architects added the cinema to Embarcadero Center Building One. ■

New York City

A Multi-Scene Lighting System Is Added To a Historic Church





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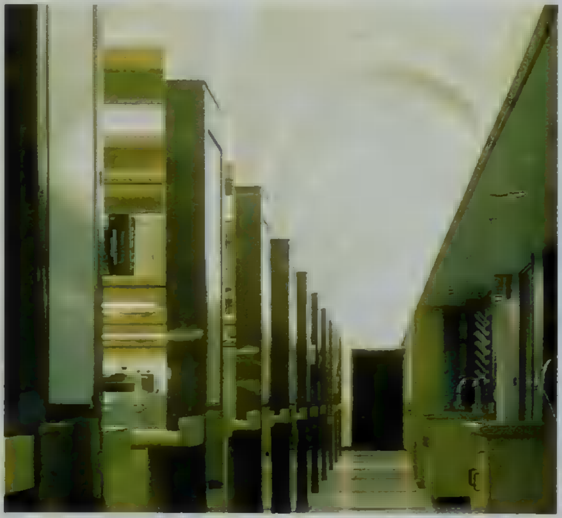
Restoration of the 150-year-old First Presbyterian Church required a subtle yet significant makeover of the lighting system. Architect Eric Hilton and lighting designer Don Wilson determined that lighting levels needed to be evened out, new lamp sources with better color and longer life had to be tested, chosen, and installed in existing fixtures, and new fixtures that would blend in with the old needed to be designed and fabricated. To complete the job, a multi-scene, preset-dimming system was needed to extend lamp-life, and to allow light levels to be altered to create an appropriate mood for different occasions. The four large Tiffany chandeliers (above left) in the sanctuary were retrofitted with low-voltage light sources. Some were aimed toward the communion table, lectern, chancel steps, pulpit, and ceiling. Sconces (above right) were added in the balconies to help reveal the vaulted ceiling, and to balance the light level between the balconies and the seating beneath them. In the chancel, new downlighting for the choir is balanced with uplighting to reveal tracery previously hidden in the dark. ■

San Francisco

Indirect Lighting Cures Sterile Lab Spaces

The Developmental Biology Laboratory in the Medical Science Building at the University of California, San Francisco, was to be a "serene and non-institutional" environment. Fong & Chan Architects organized utilities along a central circulation spine which, with its arched ceiling, forms an arcade. The ceiling of the arcade is uplit by soft, coved fluorescent lighting on one side. The ceiling over the red-oak benches, which run perpendicular to the arcade, is supplied with uplight from the top shelves. Direct light for benchtops comes from fixtures below the bottom shelves. Existing windows between benches allow researchers a Pacific Ocean view. ■



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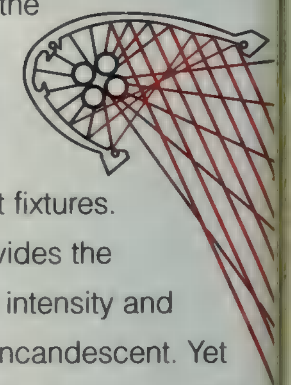

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Bid Packages, Knockoffs, and the Theft of Intellectual Property

By Bruce Thompson

Few designers realize that there is a subtle but insidious relationship between two things in the lighting industry that everyone always seems to complain about: the bid-packaging of lighting products, and thefts of intellectual property, better known as "knocking off" products. Designers may unwittingly contribute to these problems by the kinds of specifications they write and, interestingly enough, they also may now find themselves and their clients named as co-defendants in intellectual-property theft cases involving knockoffs.

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Bid packaging

Bid packaging occurs when a manufacturers' rep bids a "lot price" that includes every fixture-type on a project. But since not every rep can get every product at a competitive price, any item missing from a package can be a potential stumbling block to their securing the entire order or could later become a vehicle for punitive pricing by a competitor. On the other hand, reps may also overcharge for exclusive specialty items to improve profits, or use them as leverage to force the design team to accept other items that might not be competitively priced or even acceptable. Whenever a specifier asks, "Why can't I get what I specify?" The simple answer is "the package."

Bidding in the lighting industry generally adheres to local community standards. In a few areas, packaging is not accepted and unit pricing is the norm. However, in most markets where packaging is practiced, it has usually evolved into a winner-take-all proposition.

Given the critical nature of having a complete package, it should not be hard to understand why reps pressure designers to either open up or restrict specifications, depending on which choice may give them the advantage over competitive bidders. The alternative to being able to provide the listed products or getting prior approval is to guess what the designer may deem an "equal" and what substitutions they will approve. These assumptions are often a big, but very necessary gamble when seen from the perspective of the rep. The process may be further complicated by the fact that bidding is primarily a process for selecting the contractor. Having the "low bid" equipment package may mean a rep has the honor of being the first to get squeezed for price concessions when the contractor initiates further negotiations. To avoid losing everything, reps often take further liberties when pressed for value-engineered packages.

Many designers automatically deplore packaging as a disreputable practice attributable to manufacturers and their reps but, to a large degree, this is an unfair characterization. Consider the practice from the manufacturer's or rep's point of view: First, packaging is a sales technique that has evolved to improve "competitiveness" within the conditions of multi-name specifications. It is a means of extending the sales and profit potential of a project. In this respect it is no different than packaging in other industries, such as software-bundling, automobile-options packages, even the burger-fries-cola meal deal.

Admittedly, not every item in the package may be the best, but taken as a whole the package should provide greater value than purchasing á la carte. Second, the package is an important means of protecting the investment made by the rep in developing specifications. Reps are not paid for any of the services they provide to the design community. Literature, samples, and design assistance are all overhead expenses. Reps work on a commission, which is only paid when an order is placed. Failure to package with substitutions where necessary many mean no order at all, no commissions and, in the long run, fewer services to the specifiers.

Third, packaging is also practiced in response to the needs or demands of distributors and contractors. These are the customers who make the final and all-critical purchasing decisions. Purchasing a package can shift much of the administrative overhead from both the distributor's and contractor's staff to the rep's. This can be a substantial cost-factor on a large project. Packaging also provides purchasers with more leverage to negotiate better prices, much to the regret of many a rep.

The knock-off problem

Designers should recognize that packaging and all its associated negatives could not exist without the multi-name specification. Treating specialty items as if they were commodities by lumping them together in the same bid package, listing three names for each item, plus the ubiquitous "or equal," creates an environment in which substitutions and knock-offs are almost inevitable.

In fact, the most harmful aspects of packaging are due to the way specifications are written as much as any other factor. The most egregious practice of all is the invention of competition for truly unique products where such competition does not exist. Examples abound in which a single unique product by one manufacturer is determined to be the only design appropriate for performance and/or esthetic reasons but, to foster competition, other manufacturers are named as sources of an "equal" product even though they may have no similar product at all.

This creates an untenable situation for the manufacturers. Their products are alternately threatened with knock-offs, and they are pressured to become a willing participant in the process so their reps can fill out a package. This is not only disruptive to regular business, but also has potential serious legal consequences. There are several types of specifications that fail to promote legitimate competition and may, in fact, be of questionable legality. In each case, the crux of the problem is selection of a unique product with no current equivalent. These are as follows:

Bruce Thompson is national sales manager for Shaper Lighting, Richmond, California.

A veteran of the lighting industry speaks out on fixture packaging, and what designers should know before they specify—specs that invite knock-offs can mean big trouble.

◆ A unique and proprietary product is selected as the preferred design. The manufacturer and model is usually not listed. Instead the specification consists of a description and drawing. All manufacturers are invited to provide products that match the preferred product's unique characteristics.

◆ A unique and proprietary product is selected as a prime spec, "to establish a standard of quality." Other manufacturers with no similar products are named as equals with the intent that they will create new products sufficiently similar to, or matching, the prime specified design.

◆ A unique and proprietary product is listed as the prime spec and other manufacturers with similar products are named as equals. Whether listed as modified or not, the intent is that any manufacturer that is the successful low bidder must make a product that is exactly like the prime specified item.

The first case is particularly common for public work in which there is concern to maintain fair and open competition among all qualified manufacturers. My company was recently asked to bid a federal project. The item was described as a custom fixture. As is common practice, no manufacturers were named, only a drawing of the desired design was published in the contract documents. However, the design pictured was clearly a unique and proprietary decorative fixture produced by a specific manufacturer. One presumes that, to be acceptable to the approving authorities, any other manufacture would have to copy the design. In effect, this means fixture manufacturers are being instructed to knock off the unique designs of another manufacturer.

Instances of the second case are even more reprehensible. With predictable regularity my company receives calls from senior designers at major firms with requests that we copy a proprietary design because the original fixture they have selected costs too much, or they don't like working with the company or their rep, or they can't get it in time to meet the project deadline, or they [illegible] specification. We are asked to copy it and make it cheaper, [illegible] It is disappointing that designers who have a vested interest in protecting their own unique and proprietary designs would fail to recognize the same rights for manufacturers.

In the third case, a particular product is selected by the design team and is listed first in the specifications. To create competitive bidding, similar products by other manufacturers are named as equals, not as alternates. When another company's products are submitted as part of a low-bid package, their similar standard product may be rejected and they will be required to resubmit details exactly matching the prime-spec item. When the issue is not one of performance requirements but rather esthetics—say a unique detail that might justly be described as proprietary to the prime-spec manufacturer—not only is the specification a fiction, it is also a tacit instruction to the other named bidders to "steal this design."

"*Not only have large monetary judgments been held against manufacturers producing knockoffs, but designers and owners.*"

The law and intellectual property

These types of specifications are actually counter-productive to the true goal of competition, which is to increase value. They may also be of questionable legality and can place participants in jeopardy of significant financial loss. At issue here is the value and ownership of "intellectual property."

All professional designers have a considerable stake in this. Every designer justifiably feels a sense of ownership in their creations. Protection of such ownership is a fundamental aspect of national and international law. Obtaining and securing these property rights is a high-stakes issue. Insuring the security of designs from duplication has been addressed in several ways. The most commonly known protective measures are patents and copyrights.

But as written, the law still does not address lighting and other building products. Although lighting products,unlike building designs, cannot be copyrighted; as a legal and practical class of "utilitarian objects," they can be patented. But patents are not very good as a means of design defense.

Trade dress

Recently a new approach to design protection has been gaining favor and proving to be significantly more effective than patents. This is the use of "trade-dress" laws which are a subcategory of trademark protection. Unlike patents, trade dress does not require an application or license, which is inherently limiting. Instead it involves the total image of a product and covers a wide array of features including colors, color combinations, material use, even methods of distribution and sales techniques, which all relate to an established and distinctive identity. This might aptly be described as a "look and feel" approach. Trade-dress infringement has served as the basis for litigation in several recent landmark cases involving specification-grade furniture manufacturers. Not only have substantial monetary judgments been held against the companies producing knock-offs but, where product knock-offs occurred, members of the design team, the purchasing agents, the project owners, and even property management-companies have been named as parties as well.

In one specific action, *Donghia Furniture Company Ltd. vs. Furniture Masters Co., Inc.*, an out-of-court settlement included not only damage compensation, but also assistance in pursuing designers who commissioned or induced infringements not related to the case under litigation. Clearly, these situations demonstrate that when the legal complaints begin to fly, it's a very short distance from naming the knock-off manufacturer as defendant to naming the specifier for instigation of the infringement. So, designers beware: If you tell a vendor, "copy this design if you want the business," it is no less than instructing that vendor to "steal the other guy's intellectual property." There is little defense in claiming that everyone does it or it has always been done this way. The practice

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places everyone at risk, the manufacturers, the designer's own firm, and their clients. While there is presently no case law pertaining specifically to lighting products, one high-profile case could drastically change specification writing.

Alternative methods

What alternative methods are available to the design team to insure that "you get what you want?" There are several possible approaches that have little or no impact on competitive bidding for the remainder of the lighting package. First, the necessity and benefit of the multi-name specification needs to be re-evaluated. A 1972 ruling in the case of *Whitten Corp. vs. Paddock, Inc.*, later upheld by the U.S. Supreme Court, affirmed that designers can utilize one-name-only specifications. And, there is ample precedent for single-source specifications in other building product segments: flooring, door hardware, ceiling systems, wood, stone, other finishes, and elevators. Most of these items can be selected and supplied from single-source manufacturers as part of a "furnish-and-install" bid from subcontractors.

In any fixture specification, the first objective should be to determine if there are any products sufficiently similar in performance or style to the base selection that will be acceptable equals or alternates. If so, exact makes and model numbers should be listed. It is not appropriate simply to list companies that may have, usually have, or should have an equal. Products should be existing.

One should also keep in mind that it is usually unprofitable for one company to make small quantities of modified product to equal another manufacturer's fixtures. Therefore, a three-name specification may in fact be pointless if manufacturers determine they can't be competitive due to limited quantities. If the design team or the owner likes one manufacturer's version of an otherwise-common pro- duct type because it has special decorative elements or other unique features, it is inappropriate to require other manufacturers to copy the design of that proprietary, special element. Those manufacturers who take pride in their designs and respect those of others will "just say no" when asked to copy significant proprietary details. On the

other hand, if real competition is a more important objective, then alternative features, styles, and trims should be acceptable. If at all possible, items that are not commodities and have a limited number of acceptable makes and models should be assigned unit prices. Most importantly, when selected fixtures have critical performance or esthetic requirements, and there are no equivalents, they should be excluded from the bidding process entirely.

In the past, specifiers have identified these items as "one-name-only, no-substitution" products and left them in the bid package. Unfortunately, this may still allow the entire package to be influenced by the representative for the selected product(s). Additionally, there is no assurance that the bidding contractors will receive or pass on fair and reasonable prices for any exclusive items.

A better approach is to negotiate a firm price for the selected products with representatives in advance of the bid and then provide a "contractor net price" allowance for the items in the bid documents without naming any makes or models. After the award of the contract, the contractor can then be told what makes and models they are to purchase, and from whom and for how much.

This, in effect, allows all agents to bid their respective packages of commodity items without the influence of proprietary, one-name products. The prices of those products remain relatively confidential. Information should be provided on the size, mounting, weight, and connected load of the selected fixture to allow the contractors to properly figure labor required for installation.

With this method, there may be more up-front time and fee spent on research and negotiation. This will be particularly true if there are many specialty items. However, savings will be achieved by avoiding substitution reviews. Designers routinely check budget prices with reps. This only carries the process one step further. Of course, the reps must be advised of the intent up front. If they are not interested in cooperating, move on to an alternate design.

Any price commitment should be confirmed in writing. It should also be the responsibility of the agent to arrange an acceptable distributor mark-up, and if the project is out of the local market, to negotiate with the appropriate agent in the project territory. Of course, this method should not be abused. Be up front. If the process is turned into a fishing expedition, or an attempt to renege upon the deal is made, the strength of the designer's negotiating position and credibility disappears. Still, if these specification techniques are used there is greater chance of fulfilling the design intent instead of a bidding free-for-all.

The commodity items remain competitively bid, allowing for the lowest price. The specialty items are bid between selected equals or acceptable similar products and the specialty items are provided at pre-negotiated prices. This is a win-win process for specifiers, owners, contractors, distributors, reps and manufacturers. The reps can walk away from this process with reasonable profits and less risk of losing the whole job due to lack of key items or losing all profits due to improper substitutions. They can then focus less on complex bidding tactics and more on service to their clients. And manufacturers can provide greater service to their clients and concentrate on product improvements or innovation. With greater security from knock-offs, more research-and-development and tooling investments will be made, insuring expanded choices of products. ■

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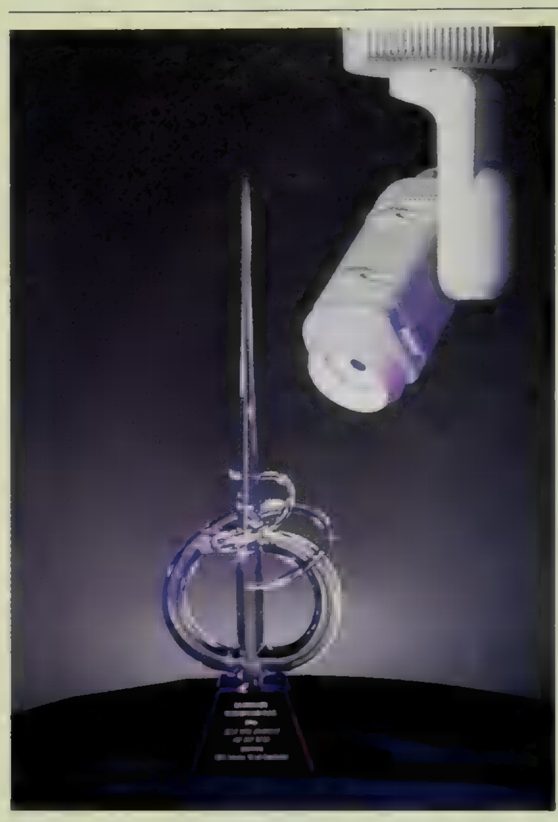
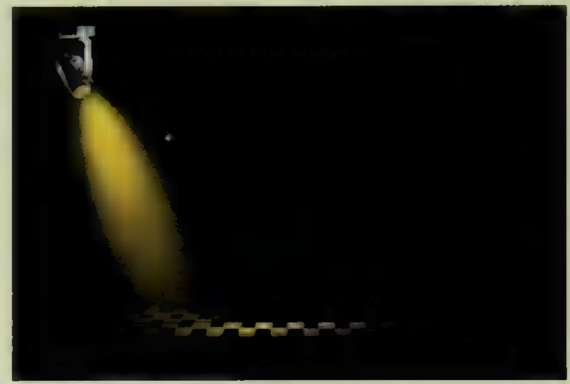
Interior Lighting



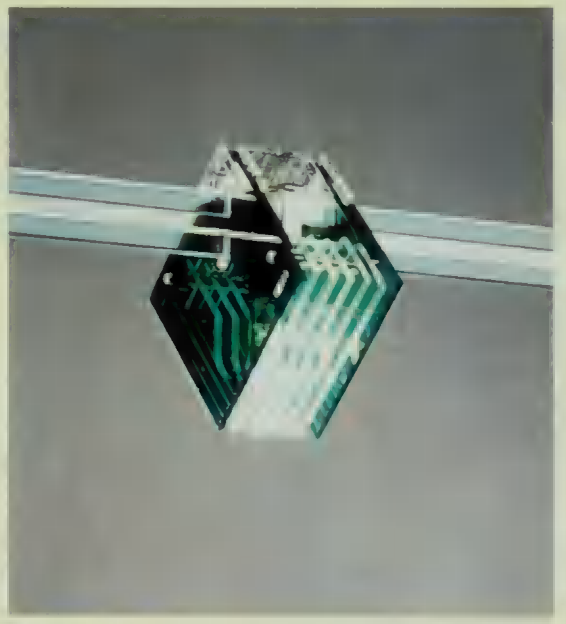


380. Robotic wall-washer

This interior-wash luminaire features a computer-controller that can change the light's colors, its degree of diffusion, or douse it altogether, while the aiming angle is regulated by a robotic pan-and-tilt mechanism. Permanent dichroic color filters produce smooth cross-fades across the entire color spectrum, and optional lenses provide beam distribution between 60- and 75-deg. 214/819-3208. Irideon, Inc., Dallas.

381. Track and luminaire family

Filigrano is the name of a new family of low-voltage lighting fixtures and modular-lighting track. Decorative luminaires (1, 3, 4) are available in emerald, amethyst, classic blue, and clear satino, and employ T3 20W lamps. A number of bowl- and cone-shaped silicate-glass pendant-mount luminaires are also available, as well as different styles of spotlights (2) which can accommodate up to a 50W MR16 lamp. Modular track (5) made of silicate glass, lined with recessed nickel-plated copper conductors, comes in straight or curved sections in a number of different lengths or radii. When cable-mounted, the track height can be field-adjusted without the use of tools. 800/932-0633. Staff Lighting, Highland, N.Y. ■



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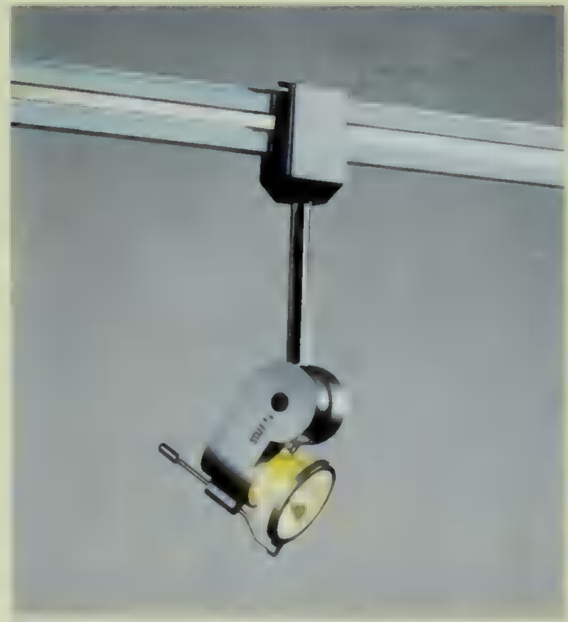

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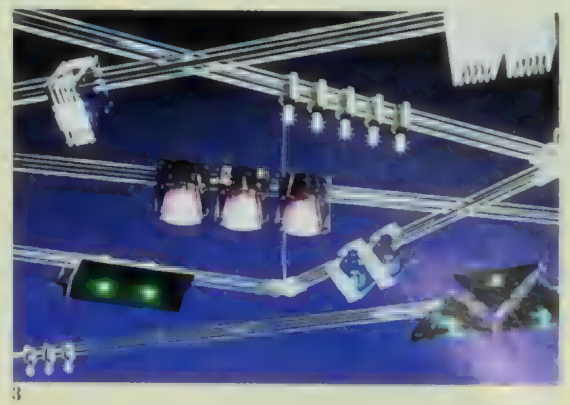

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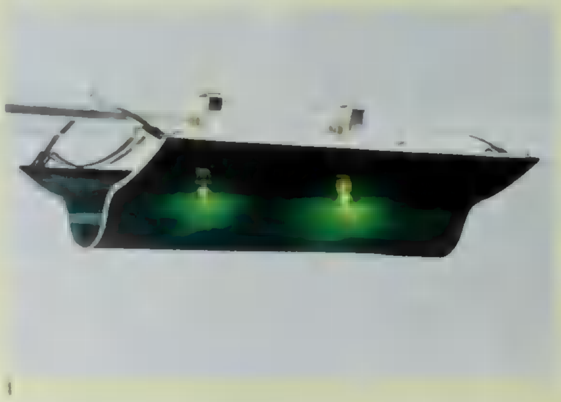
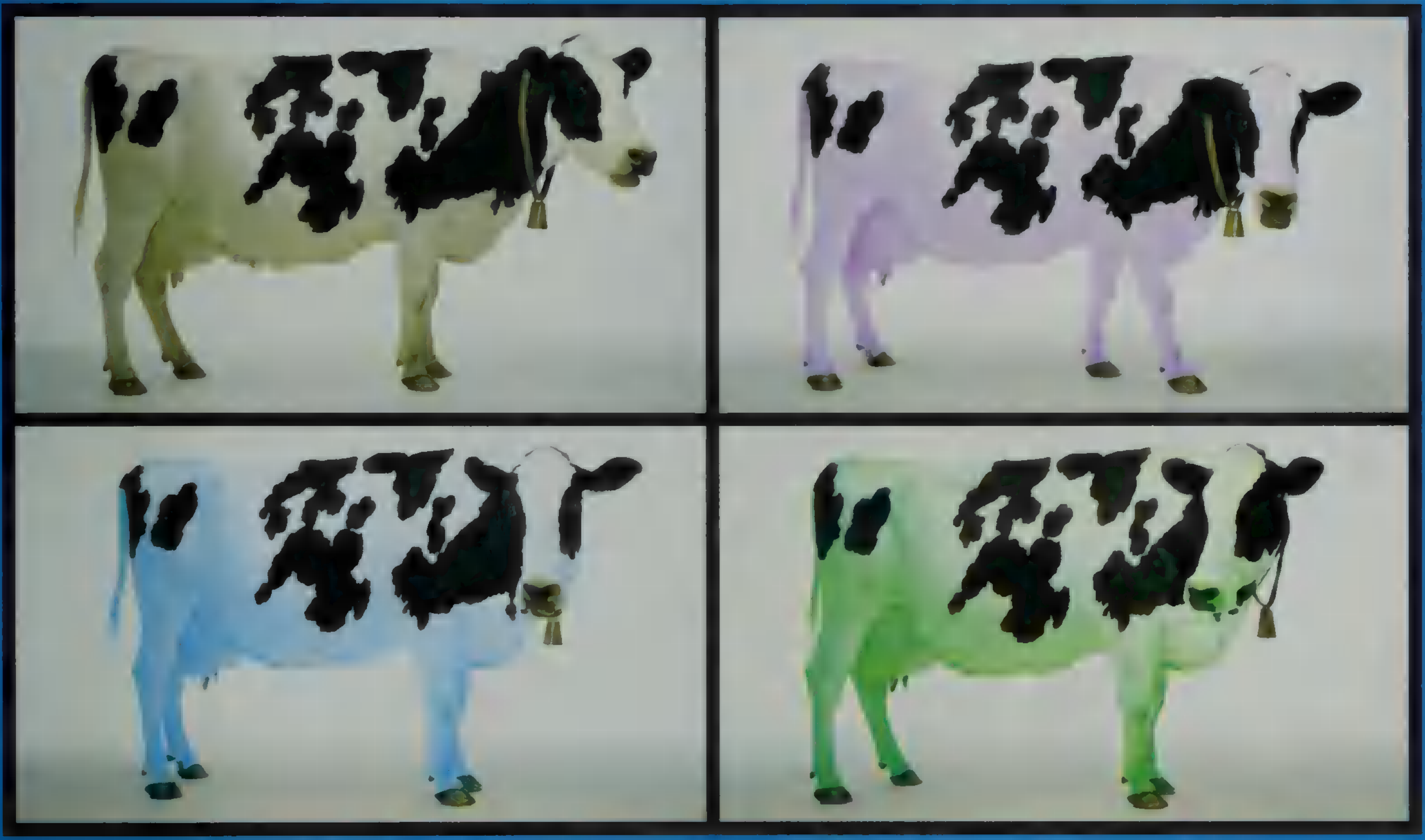


4

5

A reminder of the color consistency problems before MasterColor lamps.



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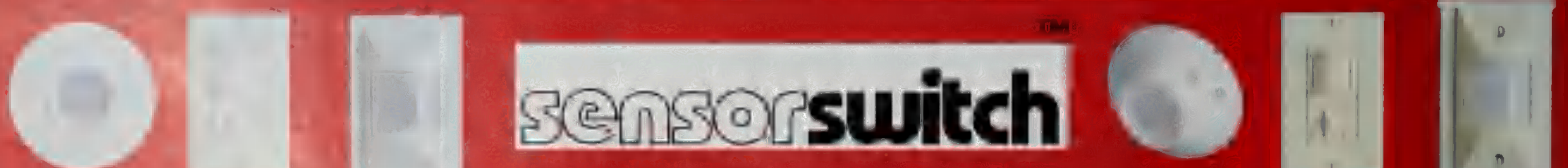

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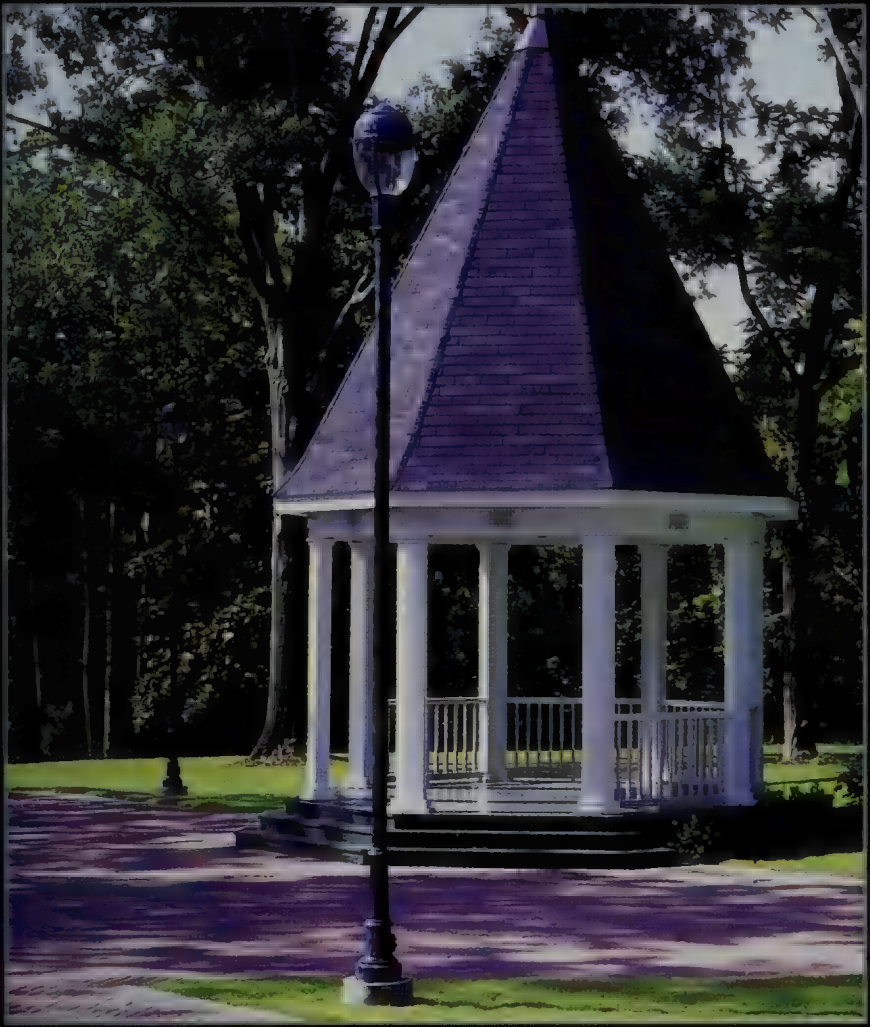

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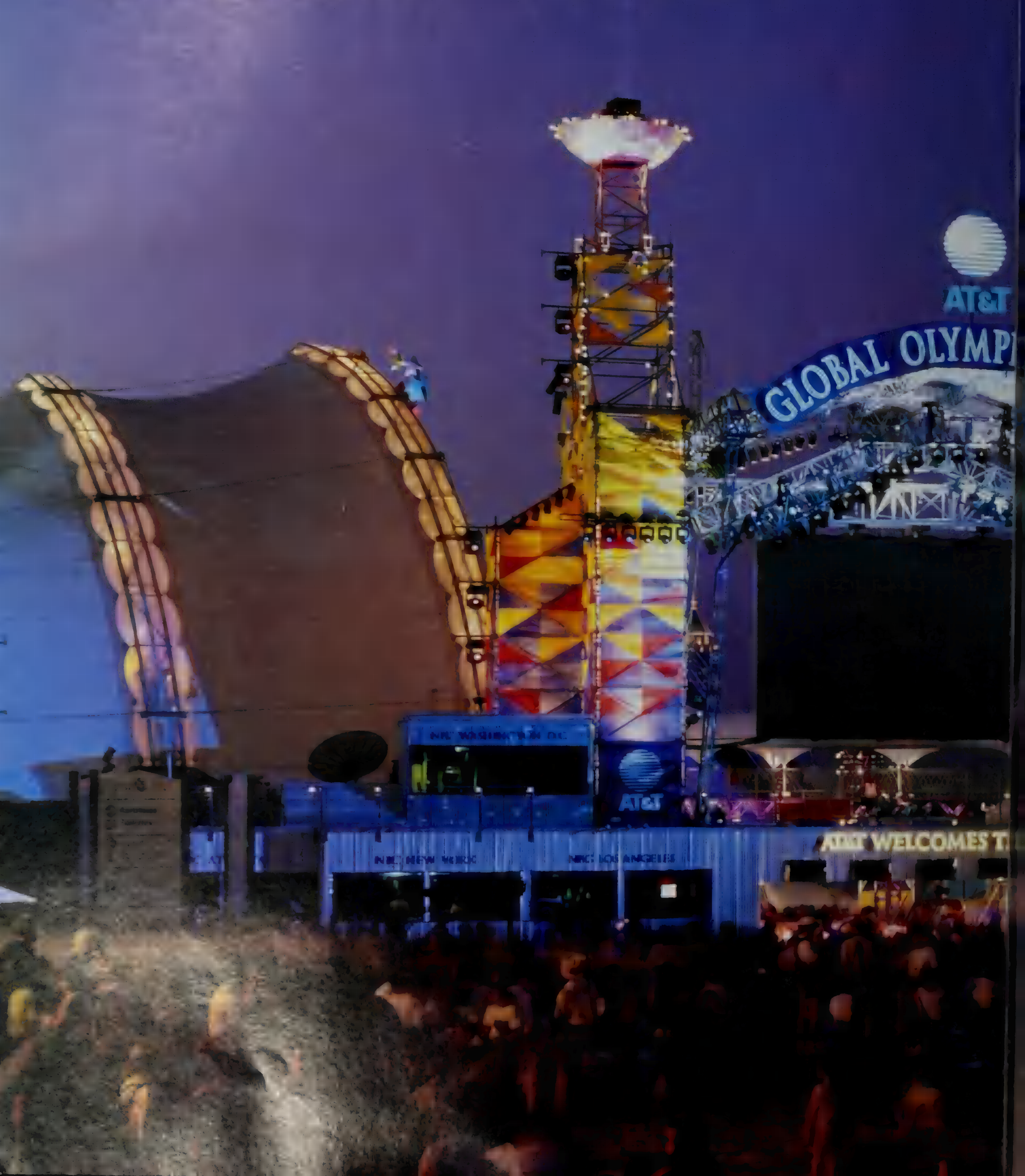
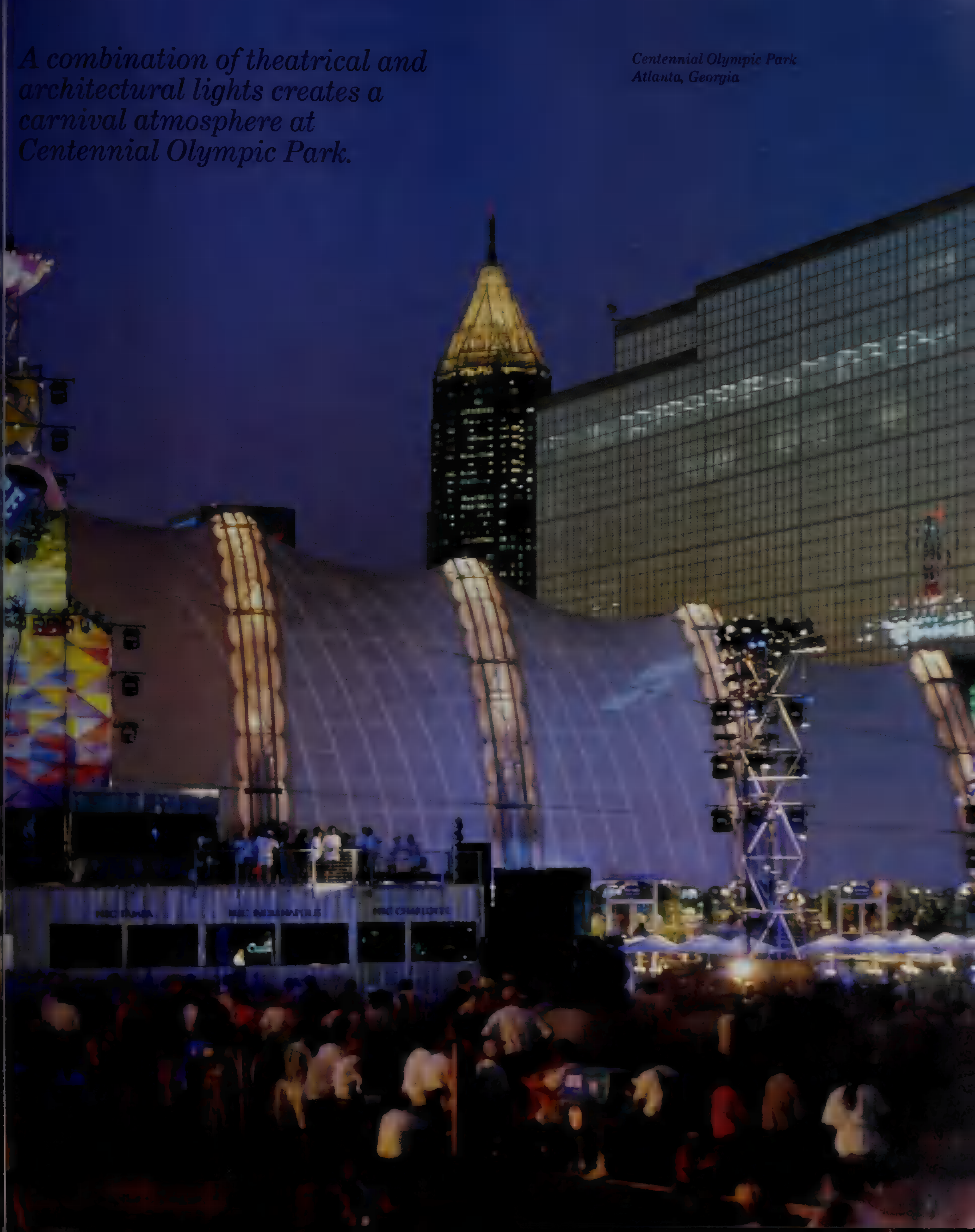
Light Games at the Olympics





A combination of theatrical and architectural lights creates a carnival atmosphere at Centennial Olympic Park.

Centennial Olympic Park
Atlanta, Georgia

Created to celebrate a century of modern Olympic Games, the Centennial Olympic Park in downtown Atlanta was envisioned as a town square, a meeting and entertainment space for visitors to the 1996 Summer Olympics. The 21-acre park, carved from a run-down urban site, contains permanent elements such as paved brick pathways and a fountain, as well as temporary structures, including over two dozen pavilions by various corporate sponsors. Overseeing this complex project was Beers-Russell, a joint venture of two Atlanta firms.

The park is dominated by eight tall columns (opposite), named Hermes Markers—the name drawn from Greek mythology—which work as landmarks to identify important areas in the park. Designed by EDAW, the lead architects for the park, and Turner Associates, each 75-ft-tall marker is made of a granite and precast concrete panel base, from which rises a perforated aluminum shaft, lit so that it glows and twinkles at night. Placing a combination of 150W high-pressure sodium and 175W clear metal halides in outdoor fixtures in the interior of the shaft, lighting designer Ramon Noya, of Ramon Luminance, has created a blend of white and yellow light. Seen through the perforated metal, the 40 fixtures, installed alternately up the shaft at two-foot intervals, create a twinkle effect. "The object becomes animated by the observer; it sparkles as he moves," says Noya. Three 375W metal-halide spots mounted just below the rings at the top of the column give the markers visibility from a distance.

For the millions of visitors who streamed through the park, the temporary pavilions were a source of entertainment. For the designers, they were an opportunity to create fantasy. Made of translucent white fabric punctuated with steel trusses, the AT&T Global Olympic Village (previous pages), designed by FTL-Happold and Last Design Company, functions as a vast canvas for projected art. "The concept was to use the building itself as entertainment," says lighting designer Candice Brightman of Animated Architecture. Brightman used a combination of theatrical lighting and video projections on the exterior of the 300-ft long, 90-ft wide, and 60-ft tall structure. The constantly changing textures and colors of the "shining building," as it was called, were created by a combination of hundreds of animated theatrical projectors, programmed to pan, tilt, change patterns and colors in conjunction with the projected images.

Cleverly constructed to resemble its famous "jellyfish" watch, the Swatch Pavilion (lower right), designed by Pfau Architecture, was a worm-like, plastic structure translucent enough to reveal its steel guts. At night, the building came alive with light. Animated theatrical projectors, backed by quartz 3200K lamps installed in the crevice between the two plastic walls of the structure, create an even, surreal glow. The lamps were fitted with color gels which were manually changed at 2 a.m. each night of the Olympics, so that the Swatch Pavilion was dressed in a fresh color every evening.

At Bud World (upper right), the spectacle was the waterfall. Cascading 40 ft from a steel truss tower, the water was programmed to spell out words and images on its way down. It was lit by 16 100W PAR64 lights with wide- and medium-wide beam spreads. "The difficult part was figuring out the aiming angle," says Jerry Hodgie Vierna, who helped design the lighting for the structure as well as the entire Centennial Park. Since the water was actually creating distinguishable images, the lights, after much experimentation, were aimed behind and to the side of the fall. Besides the big company logo, the tower was also animated with "egg" strobes, and animated theatrical projectors. *Nayana Currimbhoy*

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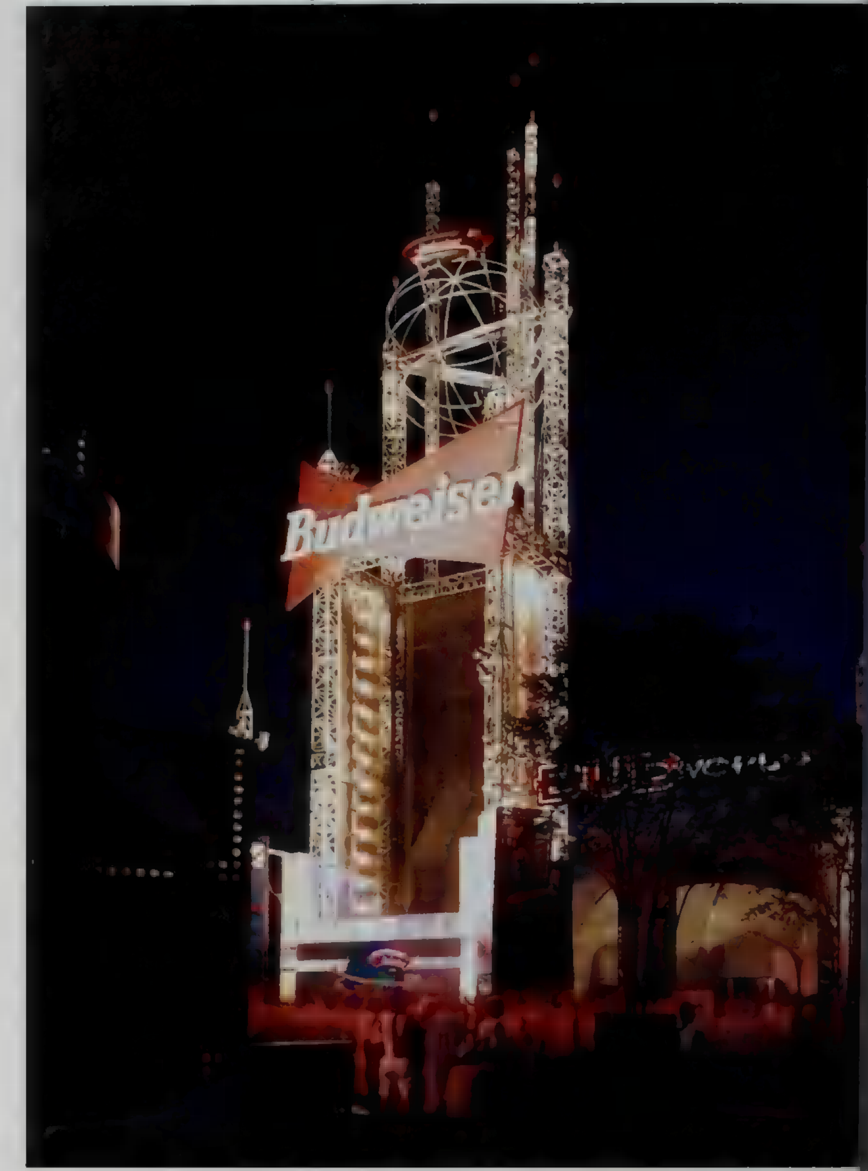

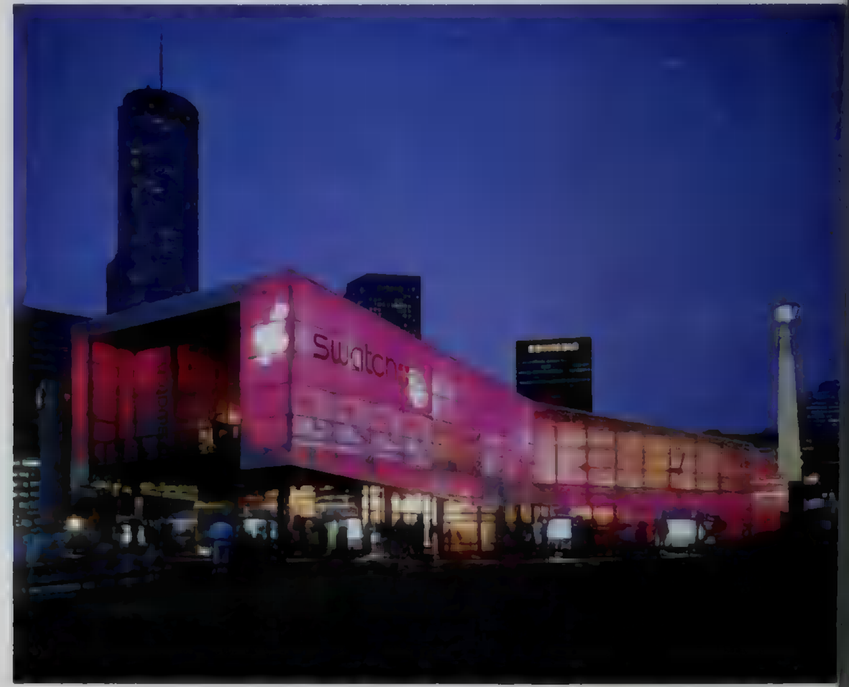

An extravaganza of moving light and color provided by animated theatrical projectors, the temporary Budweiser (top), Swatch (above), and AT&T (previous pages) pavilions in the Centennial Olympic Park were visited b millions of tourists. Eight "Hermes Markers," or perforat ed-metal columns (opposite), li from within, act as markers in the park.

Sculpting Nightscapes Out of the Darkness

By Wanda Jankowski

When Tokyo-born Motoko Ishii established her own lighting-design firm in Tokyo in 1968, it was a difficult struggle for her to be taken seriously in the hierarchical and male-dominated business culture of Japan. But she persevered, starting The Lighting Collection Inc. to fabricate her large, yet delicate chandeliers in 1978, and establishing Motoko Ishii International Inc. in 1985, with offices in Los Angeles and Paris. Today, Ishii maintains celebrity status in Japan and was a key figure in organizing and gaining government support for the first World Lightscape Conference held in September 1995 in Osaka. The conference held discussions involving the cultural and environmental issues involved in landscape lighting. Ishii revealed to conference attendees, "I have a strong belief that the 21st century is the century of light."

"The landscape during the daytime in Japan is ugly. Everybody would agree with that," says Ishii, who remedies the situation by bridging nature with the man-made, sculpting beautiful nightscapes out of the darkness with light. A focal point in Ishii's lighting master plan to beautify the seaside city of Himeji is the illumination of the 400-year-old Himeji Castle. The tower and donjon are lit with high-luminance spotlights that use compact, high-color-rendering metal-halide lamps and very-narrow-angle accent floodlights.

On weekdays, all lights are lit at sunset; then lights are gradually turned off during the night, leaving only the tower illuminated at midnight. The weekend pattern differs slightly. For spring and summer, mainly metal-halide lamps provide cool-white floodlighting; in fall and winter, the addition of high-pressure sodium lamps cast a warm-white light. When nighttime celebrations are held in the park that surrounds the landmark structure, city dwellers enjoy the sight of a glowing Himeji Castle that connects mankind and its heritage with the natural beauty of the night sky.

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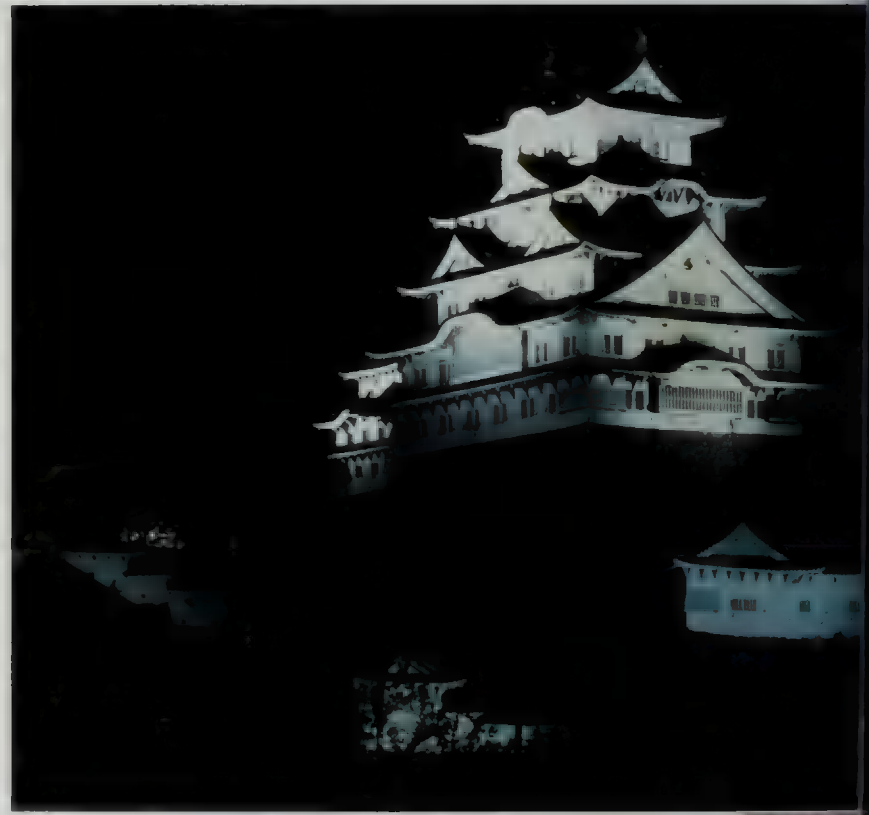
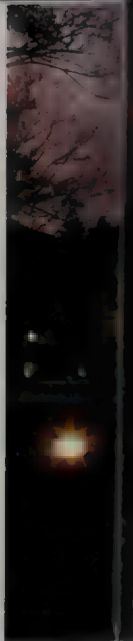


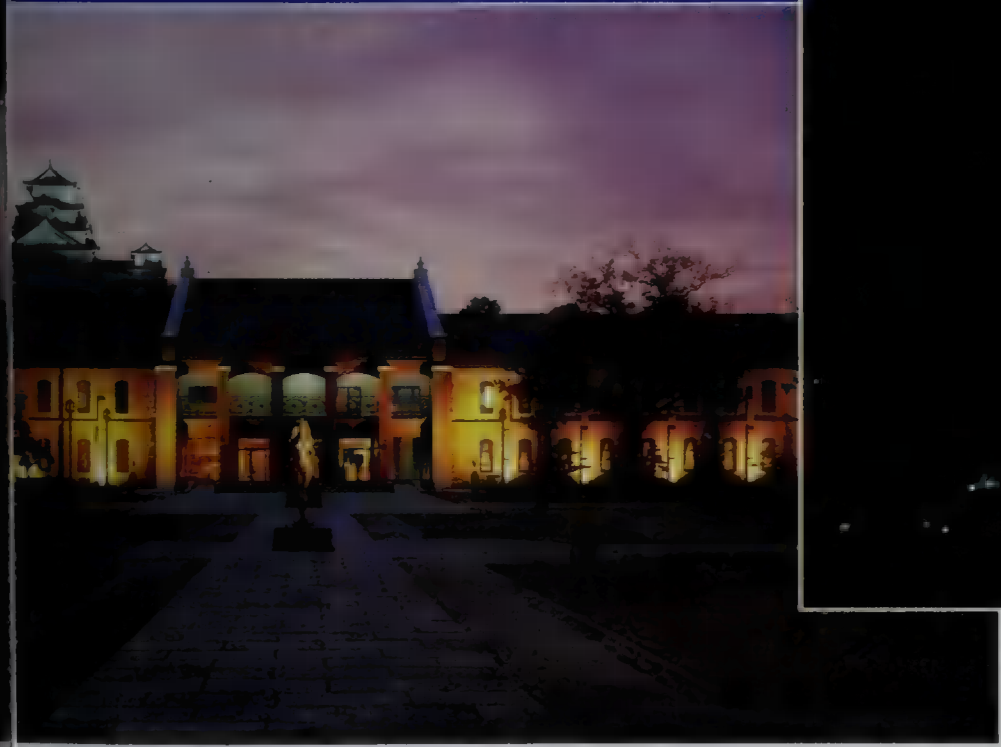


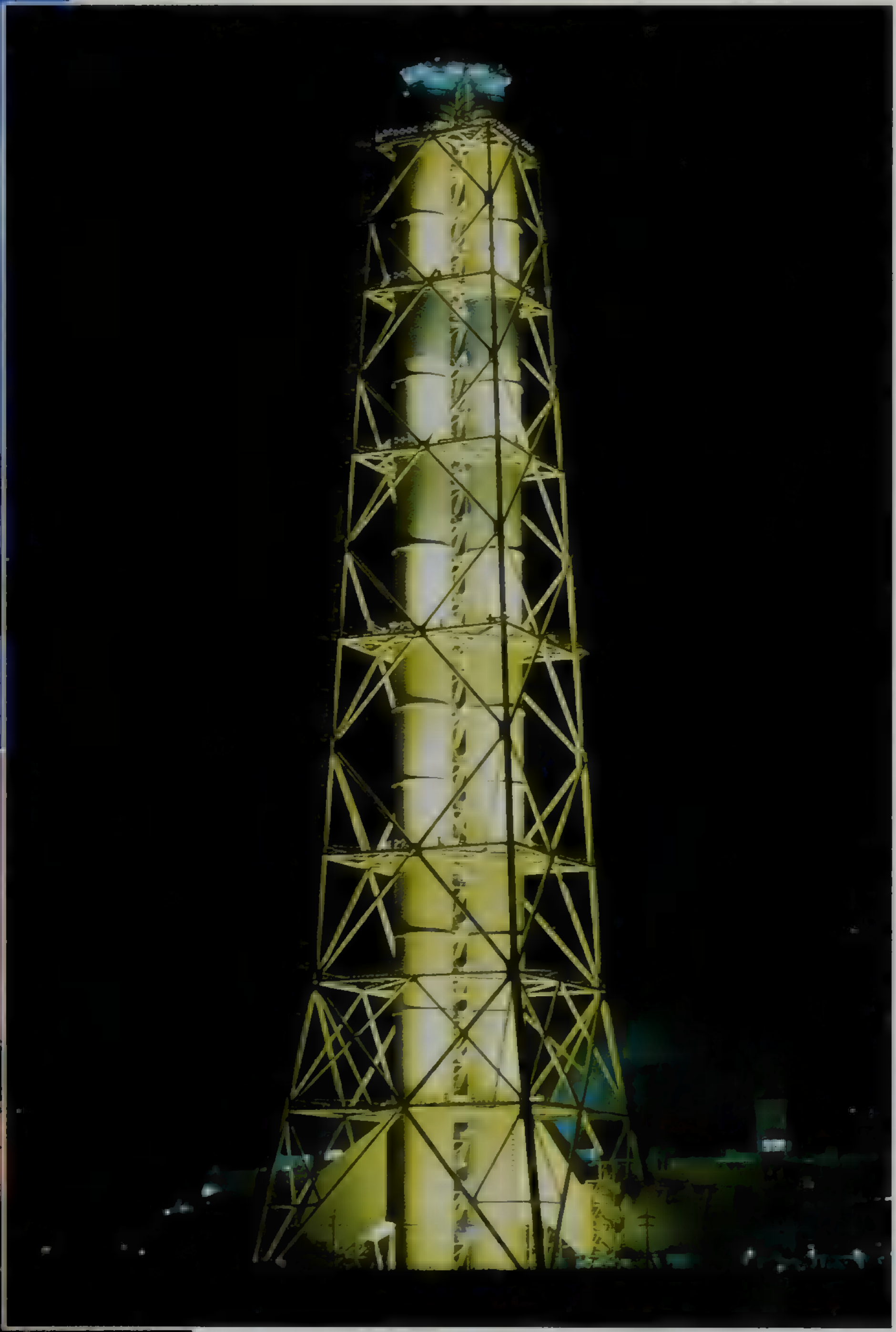
The man-made is also connected to nature through lighting at the Kansai Electric Power Co., one of the world's most modern and efficient utilities, which commissioned Ishii to illuminate one of its towers to serve as a nighttime landmark for vessels on the Sea of Hirama. The lighting system has four functions that translate natural phenomena into lighting. Base lighting indicates the seasons. In spring and summer, cool light from metal-halide lamps lights the base, and in fall and winter, it is lit by warm light from high-pressure sodium lamps. Tide-indication lights at the tower's stairwell turn on and off at five different vertical levels. Temperature is indicated by colored lights at the top of the tower, which signal different degree levels in blue, green, yellow, and red signals, and time is indicated by stroboscopic lamps. They flash for two minutes on the hour, and for one minute on the half hour.

Wanda Jankowski, has been a lighting journalist and editor for many years. She has authored several books on lighting design, including Lighting: Exteriors & Landscapes. *Her new book on decorative luminaires will be released this spring.*

© Yoichi Yamazaki photos

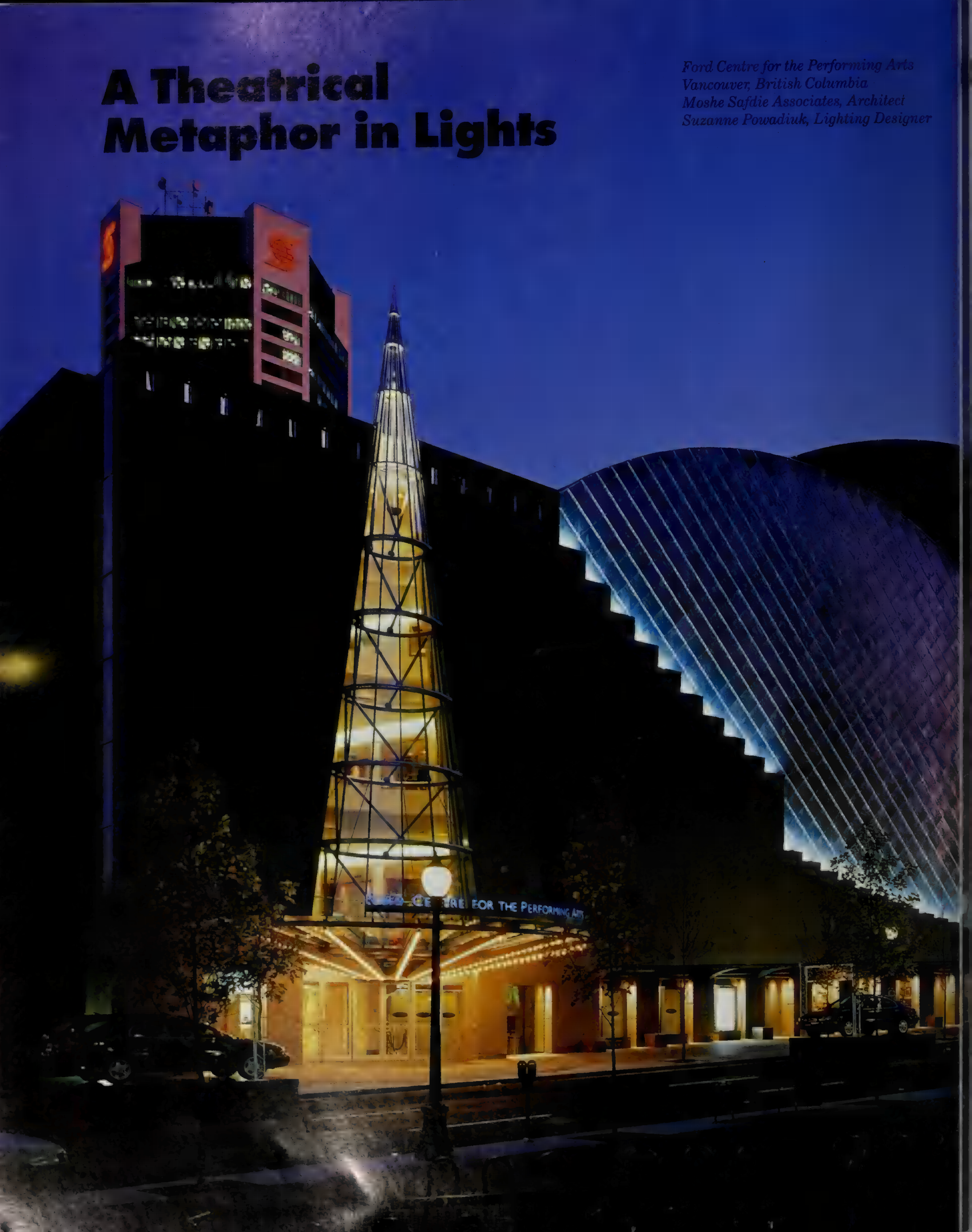
The dimensionality of the ancient Himeji Castle, also known as "White Heron Castle" due to its wing-like rooftops, is emphasized by setting the north/south and east/west lighting levels in a ratio of 3:1. City restrictions prevented fixtures from being mounted on the castle itself (opposite). The City Museum of Art in Himeji Park was part of the city's master lighting plan designed by Motoko Ishii as well (below left). One of Himeji's modern landmarks is the illuminated tower of Kansai Electric Power Co. (left and below). An Ishii trademark is to use changing lights to reflect changes in natural elements. At the Kansai tower, she has used light to indicate tides, temperature, and the passage of time.





A Theatrical Metaphor in Lights

Ford Centre for the Performing Arts
Vancouver, British Columbia
Moshe Safdie Associates, Architect
Suzanne Powadiuk, Lighting Designer



metaphor for the activity within, the lighted "seat" shapes that step up the curving facade of The Ford Centre for the Performing Arts in Vancouver add depth and drama to the building. Designed by Moshe Safdie Associates and developed by Livent, a leading producer of commercial live theater, the theater is distinguished by an arched auditorium front faced in lead-coated copper panels, and a tall glass cone that defines the entryway.

For Toronto-based lighting designer Suzanne Powadiuk, the challenge was to create a strong urban presence for the theater. "Illuminating the facade was particularly difficult because it could not be lit from a distance," says Powadiuk. Her solution was to place industrial floodlight fixtures with color-improved, phosphor-coated 175W metal-halide lamps in the narrow trough situated at the bottom of the curved line of "seats" on the facade. Besides enhancing the color and texture of the metal panels, the grazing lights add dimension and depth to the flat facade.

The glass cone that defines the entryway has been left largely unlit, so light can be transmitted from the spaces within. Accordingly, the cone glows with the light reflected from the underside of the grand stairway, and is accented with a glass beacon at the top, lit with a custom fixture containing three long-life Q2 PAR 38 250W lamps. The festive entrance canopy sparkles with rows of clear, low-wattage incandescent lamps recessed into the steel ribs on its underside.

On the interior, the lighting has been used to emphasize the clean modern lines of the design. The curving lines of the lobbies are reinforced with 50W PAR20FL lamps laid out in gentle arcs on the ceiling, while the elliptical skylight is outlined with PAR38s. In the theater, arcs of exposed lamps mounted on the underside of the catwalks bear a striking resemblance to Louis Sullivan's 1889 Auditorium Theater in Chicago. The Q25 250WPAR38 lamps strung across the arched-wood ceiling panels resemble pearls in a necklace. Custom glass balcony fronts have been housed with long-life, .4W Tivoli light-tubes that create warm strings of light for the aisles. Overall, Powadiuk has create a lighting system that, without compromising esthetic quality, met the stringently-enforced energy codes of Vancouver, and was economical as well as easy to maintain.
Nayana Currimbhoy

Designed to create an urban presence for the building, the exterior lighting for the theater (opposite) makes a bold statement across the curving auditorium facade, while in the interior lobbies (right) the lighting works to accentuate the elliptical lines of the architecture. In the auditorium (following pages), exposed lamps are strung between the arched wood panels like beads on a necklace.

Credits
Ford Centre for the Performing Arts
Vancouver, British Columbia
Owner: *Livent, Inc.*
Architect: *Moshe Safdie Associates Ltd.—Moshe Safdie, principal; Philip Matthews, Michael Guran, Rainer Goeller, Jeff Jacobi, staff*
Project Manager: *Kofman Engineering Limited (project managers, theater consultants, and prime building consultants)—Peter H. Kofman, principal; George Gouzopoulos and Douglas Campbell, project managers*
Lighting Designer: *Suzanne Powadiuk Designs (architectural lighting); Jules Fisher/Joshua Dachs Associates, Inc. (theatrical lighting)*
Interior Design: *Chada Siembieda and Partners*

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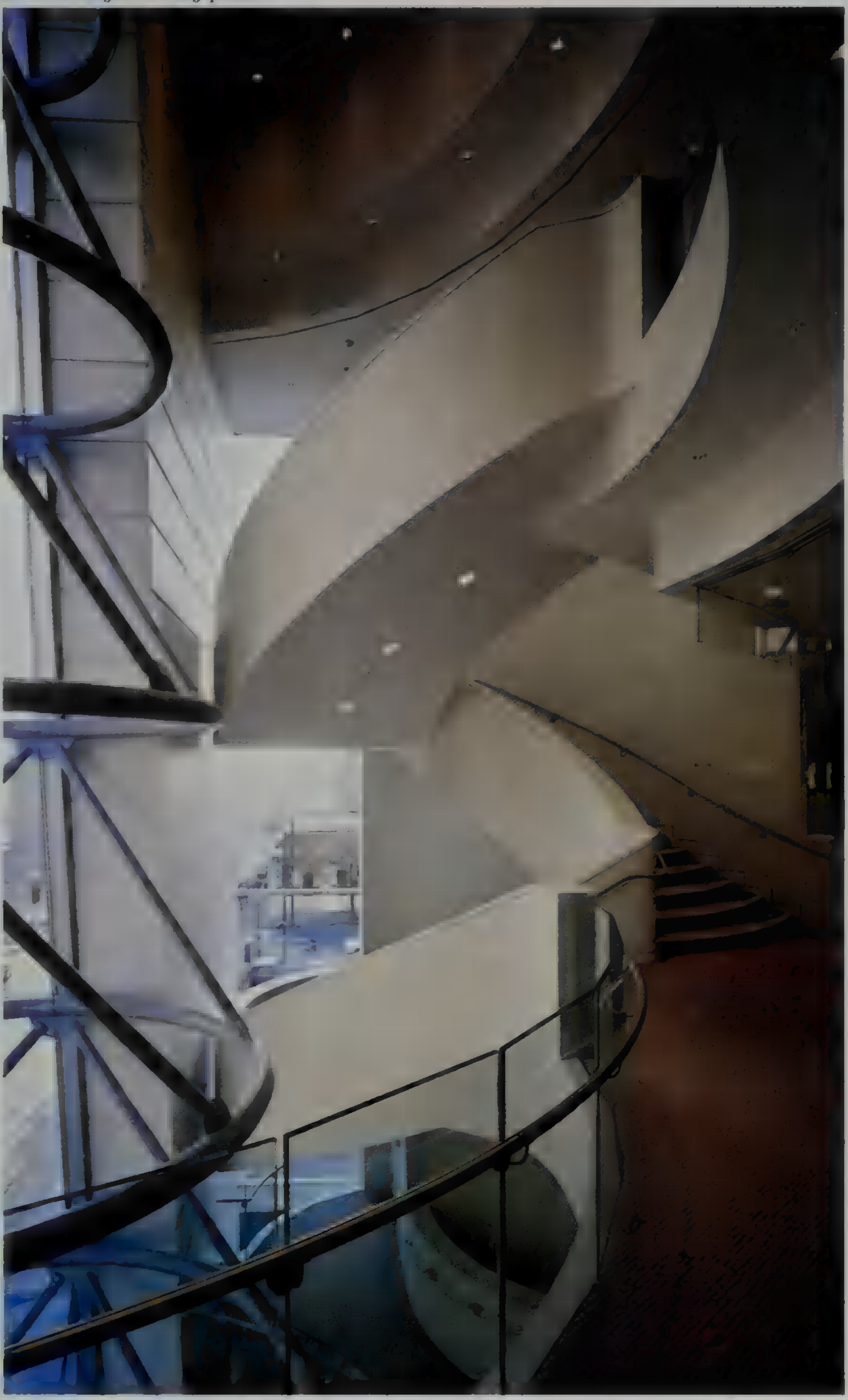

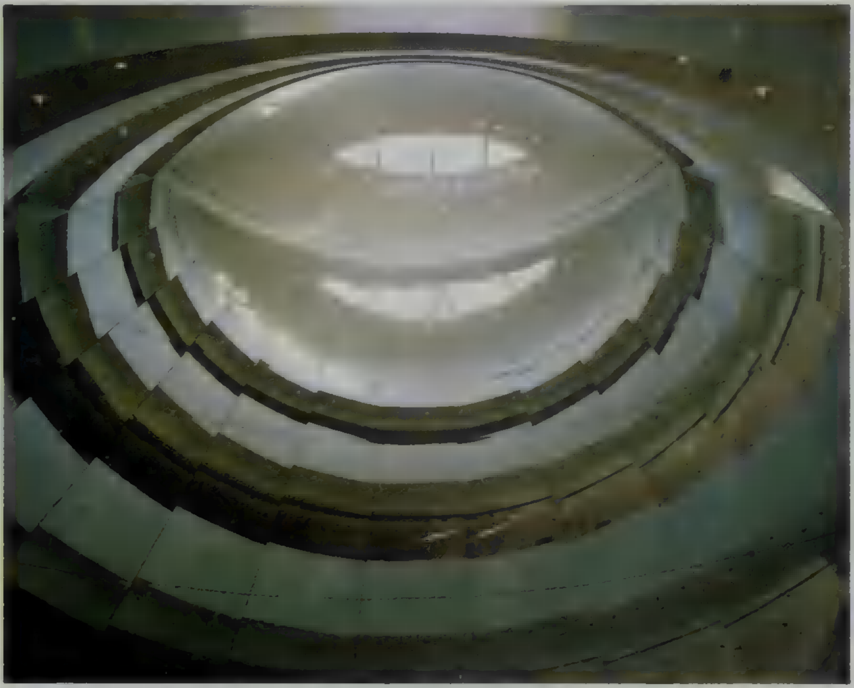

Brighter Buildings for Great Britain

By Adam Jackaway

Daylighting is currently enjoying a resurgence in British design. Nowhere is this more evident than in the design of stand-alone corporate headquarters. Initially driven by energy concerns, this comeback is being furthered by mounting evidence of occupant dissatisfaction with predominantly electrically-lit offices. There is even a widespread theory that the lack of daylighting in such interiors leads not only to worker dissatisfaction, and potentially to a reduction in productivity.

The PowerGen building

PowerGen is one of three major power companies serving England and Wales. In 1992, sparked by occupant dissatisfaction with the daylighting in their current headquarters, they prepared a program for a new building, specifying a "quality, naturally-lit environment, with no direct sunlight on the workplane." The main objectives were to promote occupant well-being while reducing the building's energy consumption, operating costs, and negative environmental impact. The resulting three-story structure sits in a quiet business park in central England and meets each of these goals with elegant simplicity. The exterior (below) belies the impressive interior view of the central atrium (below right). The building is oriented with its long axis east-west, and the primarily open plan is divided into two 40-ft-deep sections by a central atrium running the length of its interior. Office areas lie on either side of the atrium, and floor plates are identical. The entrance, restaurant, and conference rooms comprise the eastern end of the building, and the mechanical, service entrance, and computer facilities are located to the west. This spatial organization, coupled with the building's orientation, greatly eases shading requirements for the main facades and optimizes entry of diffuse skylight into the building. Daylight also enters the building through the roof of the atrium, which provides a clear focus for the building. The plentiful top-lighting elegantly emphasizes the building's structure while highlighting three stair towers, which provide vertical circulation and also house support facilities such as photocopiers, fax machines, and stationery supplies.

Overall, interior luminance is remarkably good even under diffuse skies. The atrium is particularly bright, and venturing to its central cafe is almost like stepping outside. The transition from the atrium to the office areas is pleasant and somewhat gradual, and although day-

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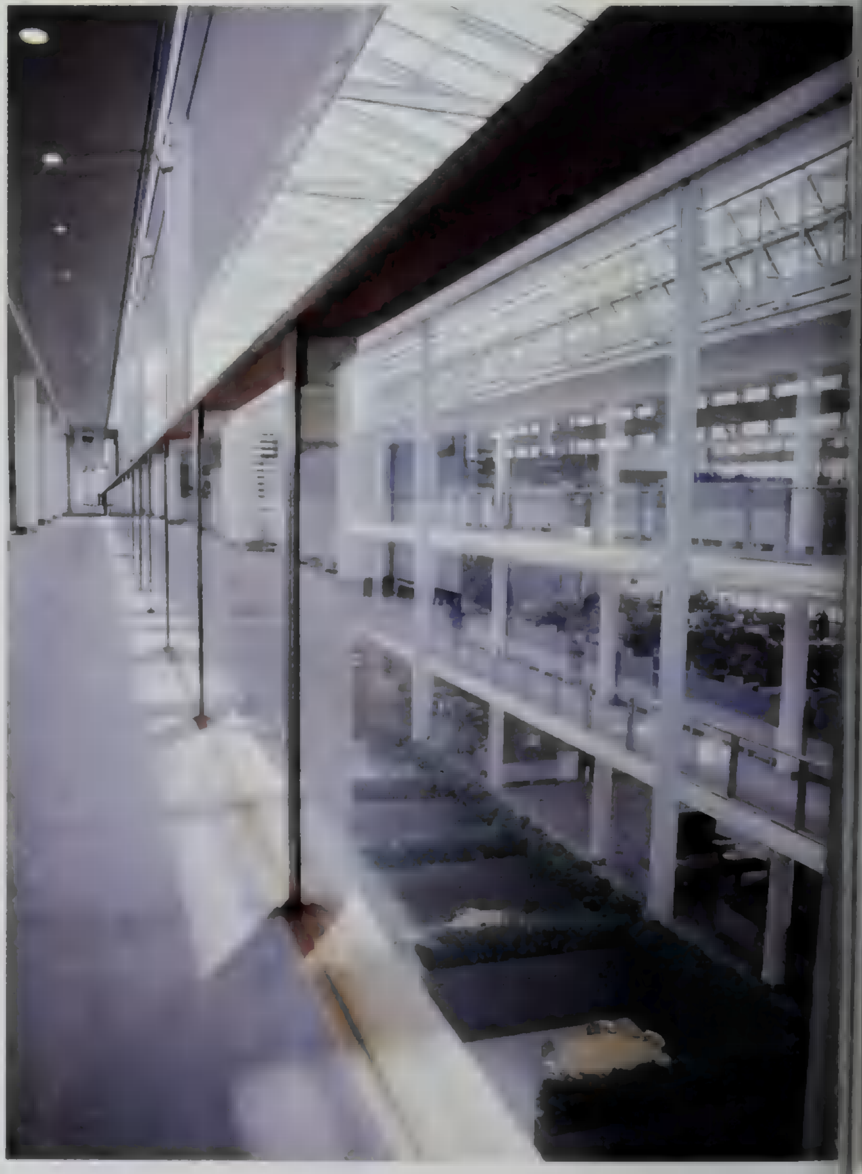


At PowerGen's Headquarters, electric lighting fixtures provide 95 percent downlighting and 5-percent uplighting and use 36W fluorescents to achieve a workplane illuminance of 400 lux. To maximize energy savings, the lighting system monitors daylight levels with photocells mounted in the atrium, and on the building's exterior (right above), shutting off fixtures in sections where illuminances exceed minimum thresholds. If subsequent levels are insufficient, occupants can use their phones to dial into the system and override the shutdown in their area. With simple geometry and a modest budget, the designers have created a well- daylit office building. Levels are good throughout, differing little from floor to floor, and the building maintains a pleasantly light-and-open atmosphere. Material finishes are consistently well chosen, and light distribution is noticeably enhanced by appropriate surface reflectances.

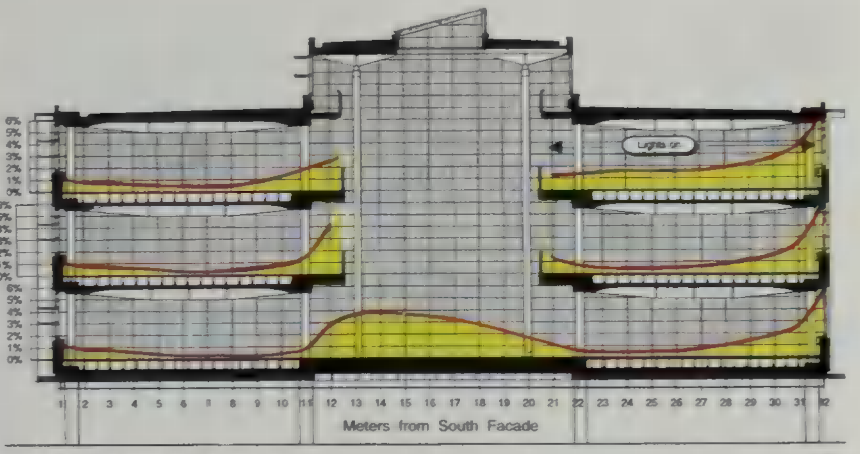
Adam Jackaway is research manager at the PowerLight Corporation, a photovoltaics company in Berkeley, California. This article was prepared while he was researcher and lecturer at the Research in Building Group, School of Architecture and Engineering, University of Westminster, London.

Two recent daylit office buildings demonstrate the progress of the daylighting movement in Great Britain.

ighting levels in the office areas are substantially more subdued, here are no "dark spots." Workplane illuminance is adequate and relatively consistent across the section. The atrium's contribution to hese areas is somewhat variable depending upon external conditions, hough it can be significant for occupants seated along its perimeter.

Effective sidelighting is always dependent upon window details ,and ere these are particularly well resolved. Windows begin above desk eight, (since little usable daylight comes from below this plane,) and xtend to the ceiling where the window header and ceiling plane are inished flush. This simple detail effectively eliminates the dark orner typically found without this juncture and serves to diminish lare while promoting a wash of light along the ceiling. Facade glazing s clear, divided into three operable panes, and comprises roughly 50 ercent of the external wall area on both the northern and southern ides. Workstation partition heights have been kept low throughout he offices—4 ft when parallel to the window plane, and 5 ft when per- endicular—preserving an unobstructed view to the glazing hroughout the plan. The cast-in-place ceiling coffers (below) are atte-white and run perpendicular to the facade, channeling daylight toward the plan's interior. Their lateral webs create a rhythm across the space and gradually taper upward at either end, providing an effective daylight gradation. Sunlight is allowed to strike the stair towers. Here, solar-control louvers were omitted above the towers to allow for occasional direct sunbeam penetration into the building. These elegantly designed towers afford the sun a "canvas" to render in light and shadow. The resulting patterns enliven the space and enable occupants to gauge the progression of time throughout the day and seasons. The visual environment in the office areas is intentionally kept stable throughout the day in order to minimize distractions, and direct sun is prohibited for most of the year by external horizontal louvers along the southern facade.

Depending upon the direction of the field of view, the continuous glazing can result in high visual contrasts. This problem is partially mitigated by the mullions, which break up the glazing area, and by louvered overhangs that provide a medium-bright transition element between the darker interior and the brighter sky vault. Direct-beam sunlight can penetrate the southern side of the building during winter months, but internal blinds offer shade. *(Continues)*



DAYLIGHT FACTOR CURVES

Daylight factor curves superimposed on the building section (above) demonstrate the PowerGen building's even daylight distribution.

Credits
PowerGen Headquarters
Coventry, England
Owner: *The PowerGen Company*
Architect: *Bennetts Associates*

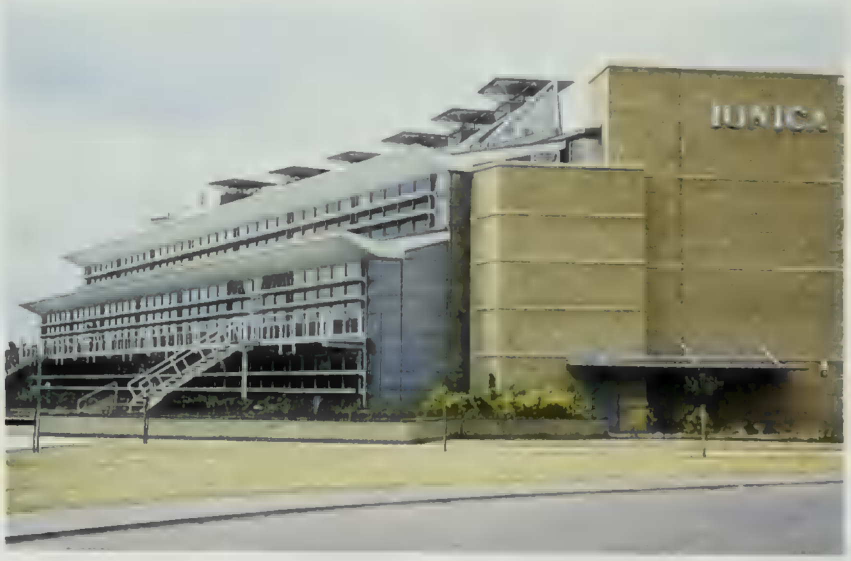
The Ionica Building

Ionica is a new wireless-telecommunications company, in Cambridge, England, that began operations in early 1996. Ionica, seeking a new headquarters with a modern, high-tech imagery to help establish their emerging identity in the marketplace, explicitly sought an energy-conscious design. The building program also placed a high degree of emphasis upon daylighting—to reduce electric-lighting loads and foster occupant well-being—and specified a diffuse daylit interior with minimal glare and no direct sunlight on the workplane.

The completed structure's form encloses a primarily open layout, and orientation and spatial distribution are clearly driven by daylighting concerns. The main office areas focus around a curving central atrium, and shallow office plans ensure daylight availability at all workstations. Spaces which are less daylight-dependent are pushed to the central northern core. Plant services and egress towers are tucked against the building's eastern and western ends, where low-angle sun makes glazing problematic, and the dominant glazed-wall faces south to simplify solar control and maximize diffuse skylight accessibility. The curving northern facade is significantly less transparent but provides adequate daylight access through a series of large, punched windows.

As at PowerGen, the glazing plane is divided into thirds and solar shading is again provided by a series of louvered overhangs (bottom right). The unshaded northern windows comprise roughly 25 to 30 percent of the exterior wall, and feature internal splayed edges to give the appearance of a wider glazed area, and ease the visual transition from the bright sky to the darker interior. Exterior louvers provide competent solar shading for the south facade. The toplit atrium is extremely effective and daylight distribution is plentiful in most of the building even on overcast days. Few dark areas are to be found in any of the work environments on the first and second floors, but daylight-factor analysis does reveal a range of levels across the section, so the location of workstations is clearly important. The only inadequately daylit office area is at the ground floor, where access to daylight is hampered both by the reduced first-floor slab opening (section opposite) and by inaccessibility to the northern-facade glazing, due to a series of mainframe computer rooms adjacent to the entry. The atrium's aperture consists of a central, pitched glazed section (bottom left) extruded as a south-facing arc. At its base lies a series of internal horizontal, white-painted louvers that block direct sun from entering the building below. The louvers are broken into bays by structural beams supporting the six ventilation towers and, viewed from below, the pattern of bays become dynamic lighting fixtures that shower diffuse light down into the atrium.

Below and along the atrium's northern edge runs a largely opaque wall (opposite) bounding the building's northern core. This cleverly positioned partition serves as a reflecting surface, enabling the atrium's toplight to reflect laterally into the office areas along the building's southern side. This strategy is a welcome advance over traditional atrium designs, which generally include toplighting but fail to

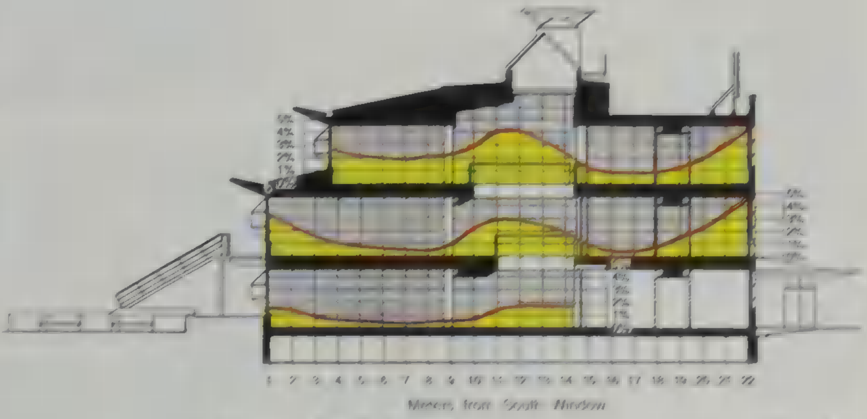


provide suitable surfaces for it to illuminate. Glare conditions are again similar to those at PowerGen. Most problems occur along the southern facade from direct winter-sun penetration. Occupant control is provided by interior blinds. At all building apertures, contrast glare is effectively minimized with light-colored mullions and bright surfaces surrounding the window plane.

The second-floor view looking west (below) reveals the daylight contribution of both the atrium and the facade. Daylight-factor graphs for both buildings (previous page and right) show widely different results from quantitative analysis. Measurements in the PowerGen building are surprisingly low, but the consistency across the section is commendable. The Ionica building measurements reveal more diverse conditions, but overall levels are plentiful.

Unique lighting fixtures for the office areas were custom-designed to optimize both lighting and acoustic performance—hence their wide section—and are oriented in rows perpendicular to the glazed facades. Each row is comprised of five separately controlled lamp sections and, depending upon daylight availability, sensors at either end of the rows successively dim sections in a continuous fashion from the ends toward the center of the office spans. A combination of downlighting and uplighting was achieved from a single source by omitting the fixtures' top plates, thereby effectively maintaining ceiling brightness. After daylight hours, a workplane illuminance of 420 lux is achieved in the office areas and special daylight-spectrum lamps in the atrium downlight its northern wall.

Credits
The Ionica Building
Cambridge, England
Owner: *The Ionica Company*
Architect: *RH Partnership*
Daylighting designer:
Cambridge Architectural Research Ltd.



DAYLIGHT FACTOR CURVES

Although direct sun is largely eliminated from the building's interior (left), varying sky conditions translate effectively into subtle yet noticeable changes within the building, and the connection between the internal and external environments is readily apparent. Material finishes have been chosen to promote daylight distribution—as light-painted surfaces predominate—while brightly colored furniture and wood detailing add welcome visual accents.

Perhaps the most instructive lesson learned at Ionica is the effectiveness of the atrium's northern wall as a secondary daylighting source, and a visit to the adjacent "tea stations" on the lower floors convincingly reaffirms the notion that successful daylighting is often more about handling the light than about striving to achieve high light levels.

Manufacturers' Sources

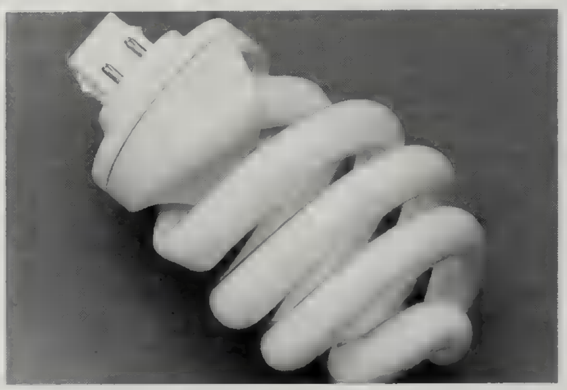
For your convenience in locating lighting fixtures shown in this month's feature articles, RECORD has asked the architects and lighting designers to identify their sources.

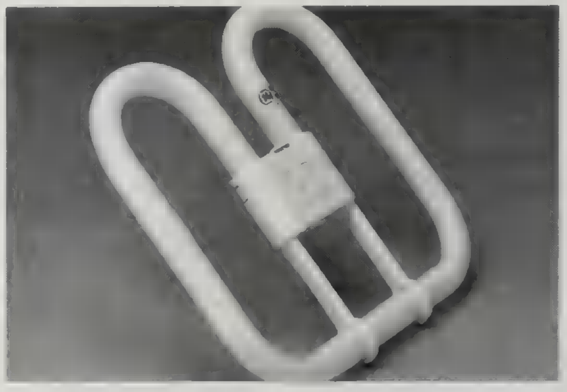
Pages 24-27
Ford Centre for the Performing Arts
Vancouver, British Columbia
Moshe Safdie Associates, Architect
Suzanne Powadiuk, Lighting Designer
Entrance canopy: Norbert Belfer (Marquee Lighting Strips). Metal-halide floodlights: Lumark. Glass Beacon (in theater): SPI. Recessed downlights: Capri. Lighting at skylight: Capri (8-in. aperture PAR downlights).

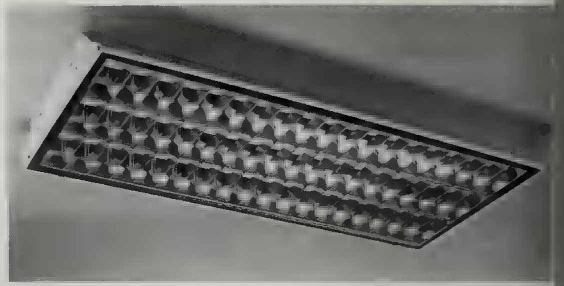
New Products

382. Curvaceous compact fluorescents
New light sources from General Electric include two lamps with somewhat unusual shapes. The Heliax (right, top), shown at May's LightFair with promised availability early in 1997, resembles a swirl of soft ice cream. Intended to closely mimic the short size and outline of incandescent A lamps, the 32W plug-in fluorescent has a single-tube, open-spiral design said to minimize light trapping and improve optical efficiency. Shown below is the newest 2D bulb, a 55W version that brings the 2D line to a total of six wattages. 800/GE-LAMPS. General Electric Company, Cleveland.

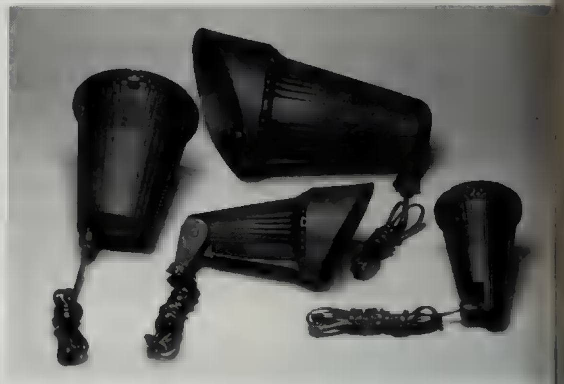
383. Lighting the VDT-intensive workplace
Only 3 3/4-in. deep, the TE3P (right) is said to provide low brightness from oblique angles, illuminating computer screens without glare or reflections. Suitable for lower-height, 8.5-ft ceilings. 215/831-7700. Simkar Lighting, Philadelphia.







384. Lighting the garden path
A new low-voltage line from Greenlee, the LV series (below) is designed specifically for residential and commercial installations that need a high level of illumination but where low-voltage operation is required. Fixtures offer a variety of size, optic, and mounting options to suit any exterior landscape need, including coastal environments and harsh soil conditions. 214/466-1133. Greenlee Lighting, Inc., Carrollton, Tex. ■



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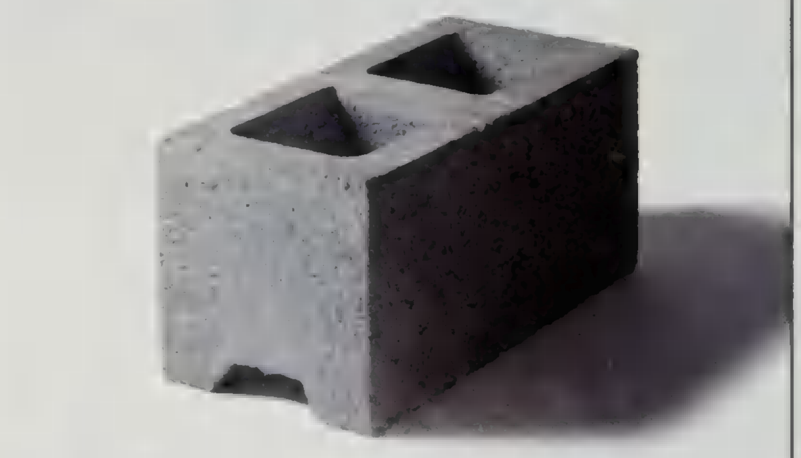

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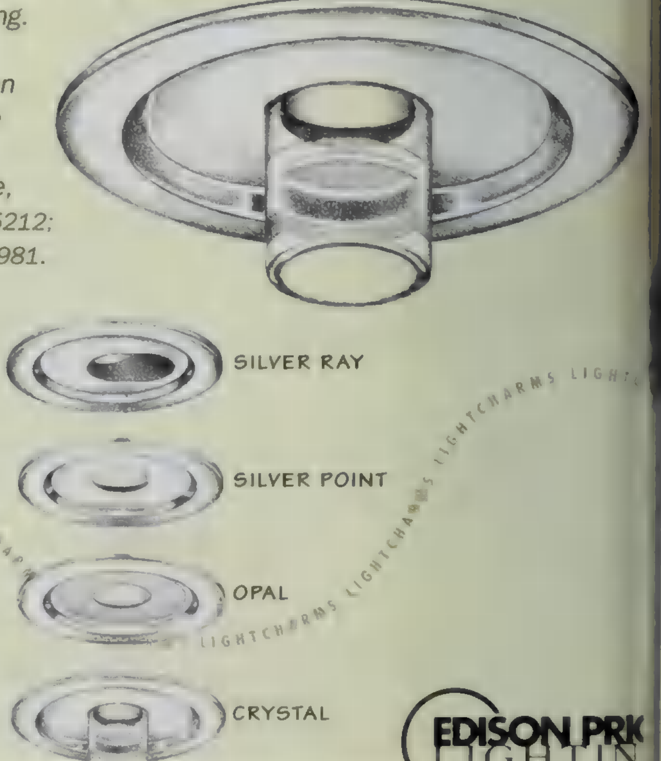

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Illuminating Engineering Society

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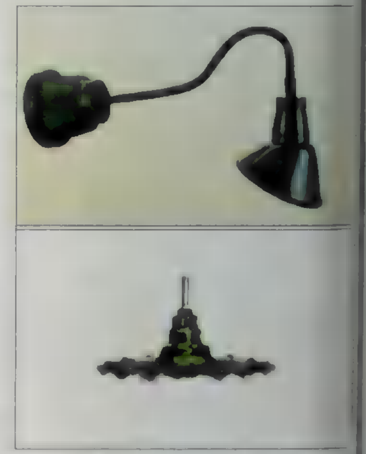

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The L.C. Doane Company

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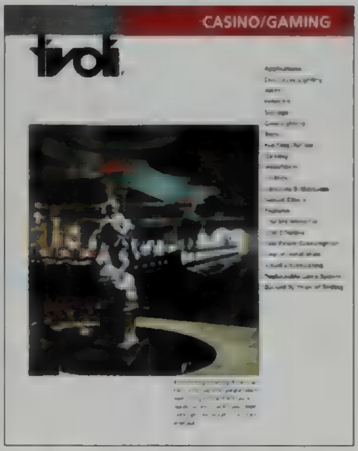

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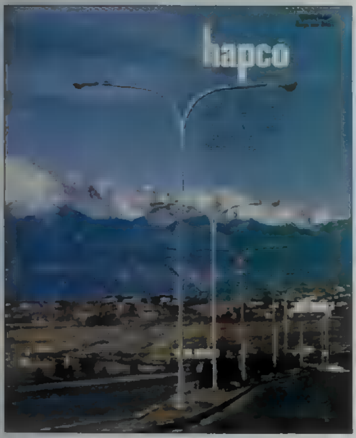

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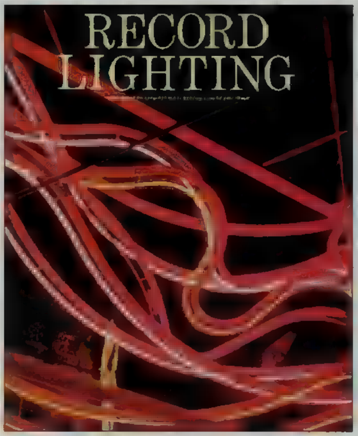

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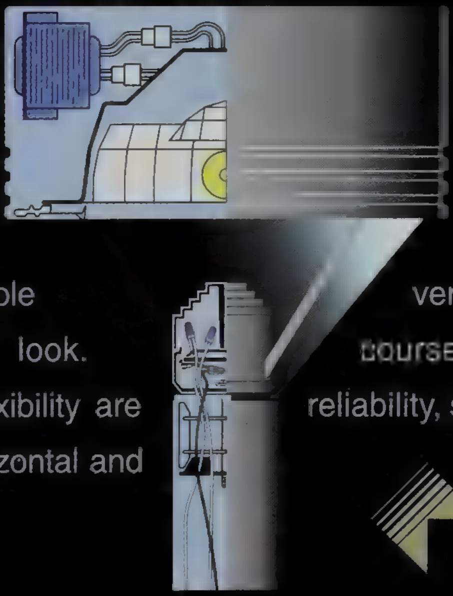

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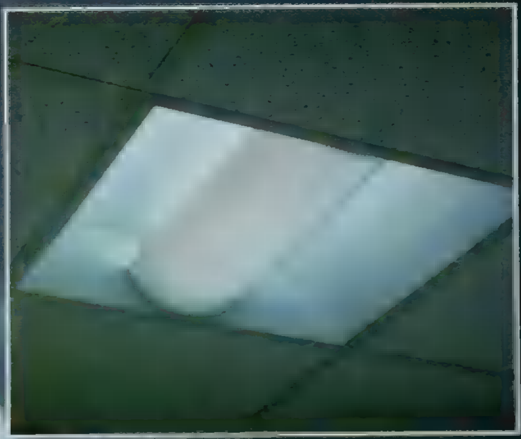

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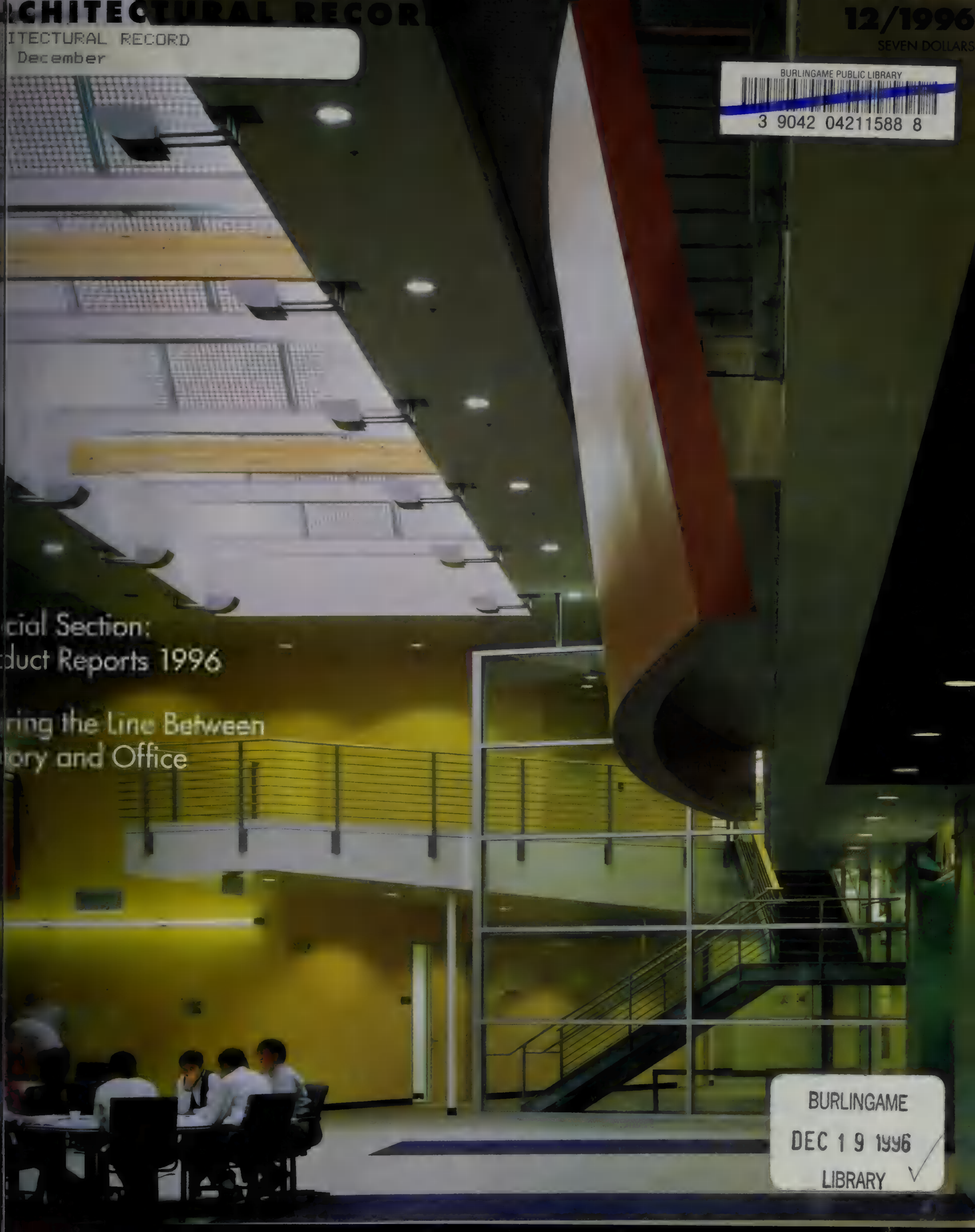

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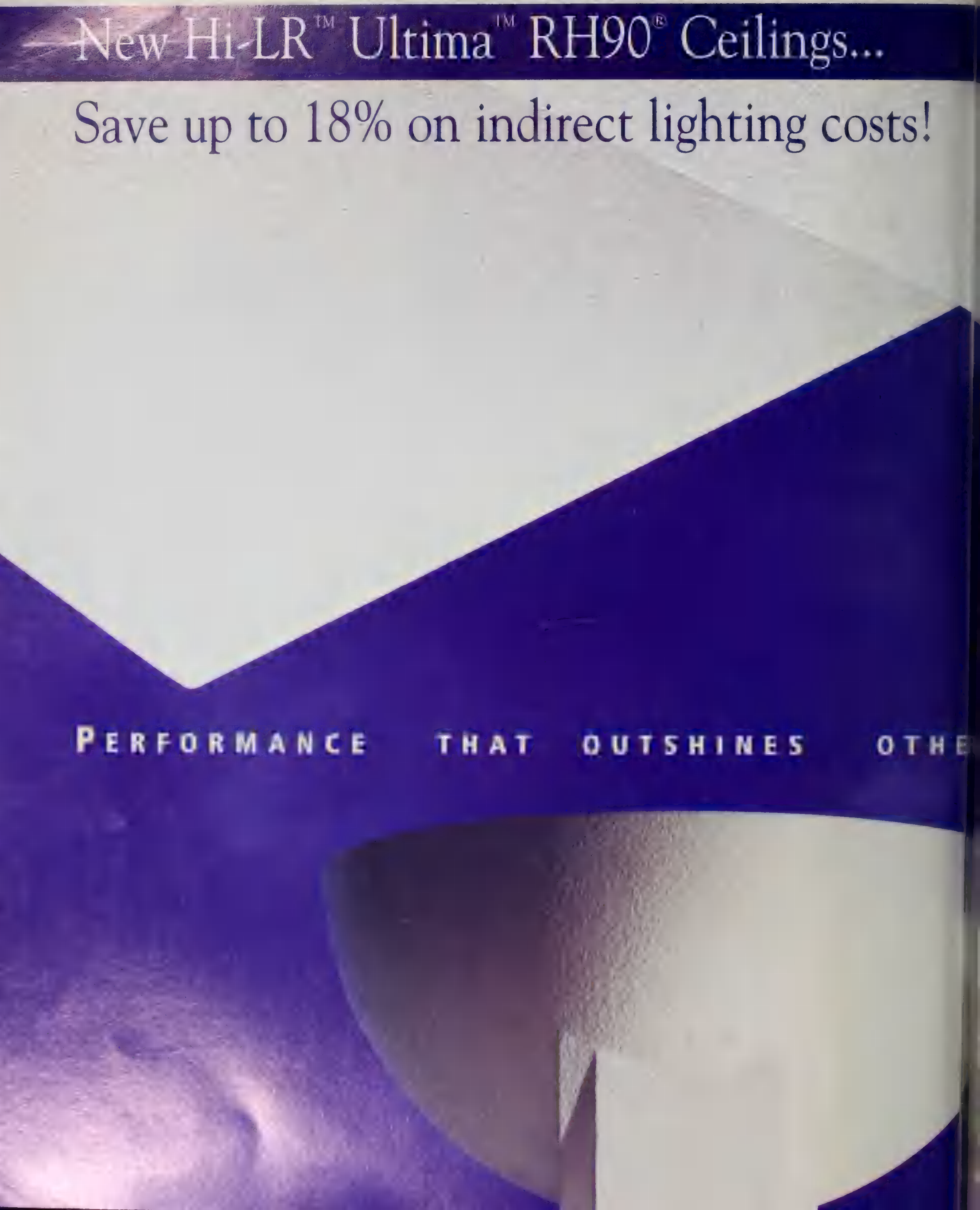

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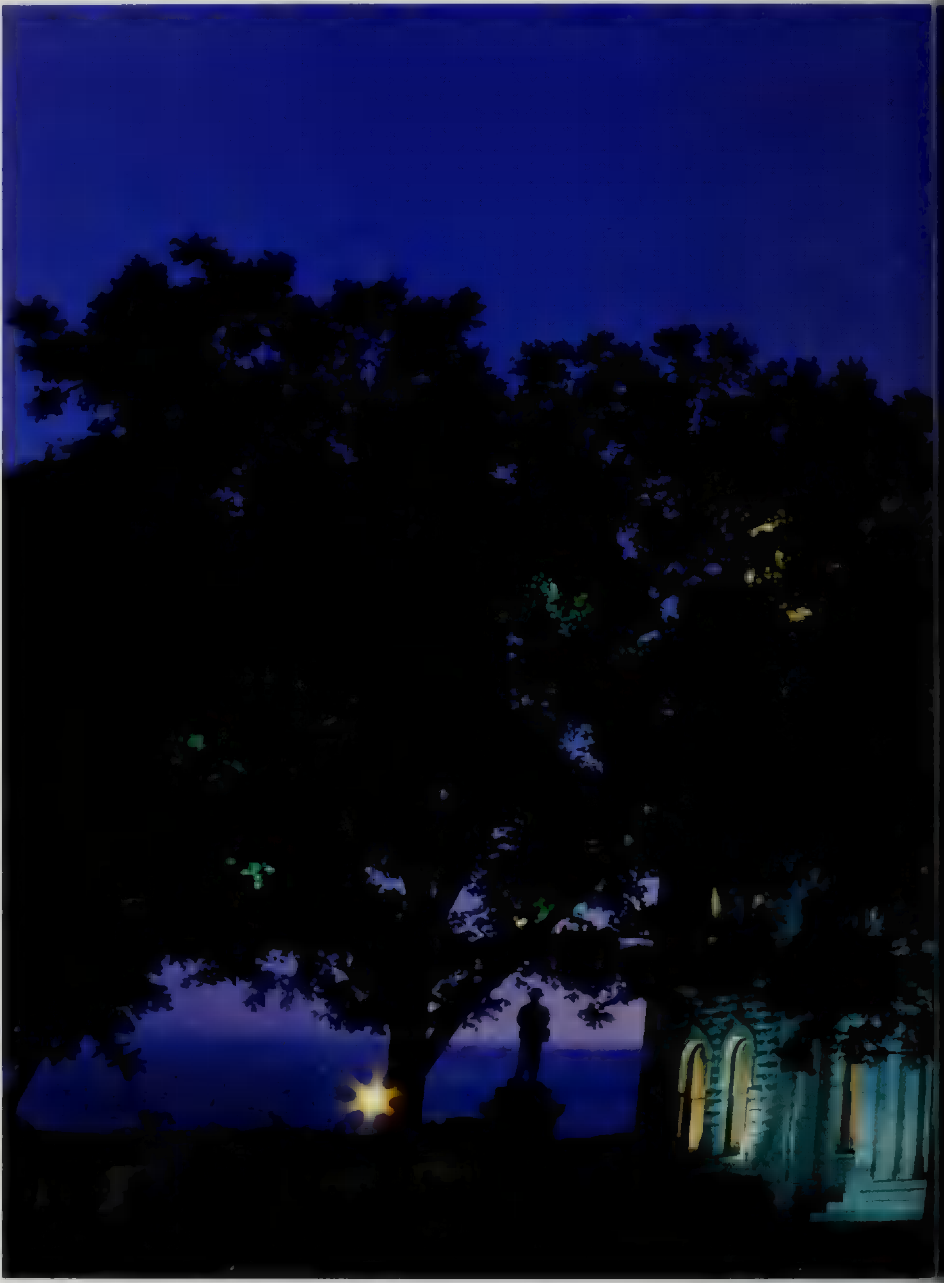
WHEN IT CAME TO RENOVATING THIS HISTORIC COURTHOUSE, EVEN THI



In 1964, The Parker County Courthouse in Weatherford, Texas was designated a Texas Historic Landmark. And thus began the slow, methodical process of restoring it. First to receive attention was the structure's limestone stonework. Later, the roof was replaced. Then came the windows, which proved to be one of the most challenging aspects of the project.

The Historical Survey Committee mandates that if nothing remains of a historic building's original windows, the new ones must be faithful reproductions, right down to the last deta

Since the courthouse's original wood windows had been replaced by aluminum ones some years back, that meant that all 105 of the new windows had to be virtually identical to those made and installed over a century ago.

Bids were sought, but only two manufacturers felt qualified to respond. One of them, Marvin Windows & Doors, had actually been recommended by a company that was asked to bid but declined.

Though underbid by the other finalist, Marvin's figures were based on building the largest windows with structural muntin bars to withstand the winds that buffeted the building's hilltop site. Intrigued, the architect asked each company to build a sample window. One look at the prototypes and the job was immediately awarded to Marvin.

For the next several weeks, Marvin's architectural department busied itself recreating the past. Working from turn-of-the-century photographs

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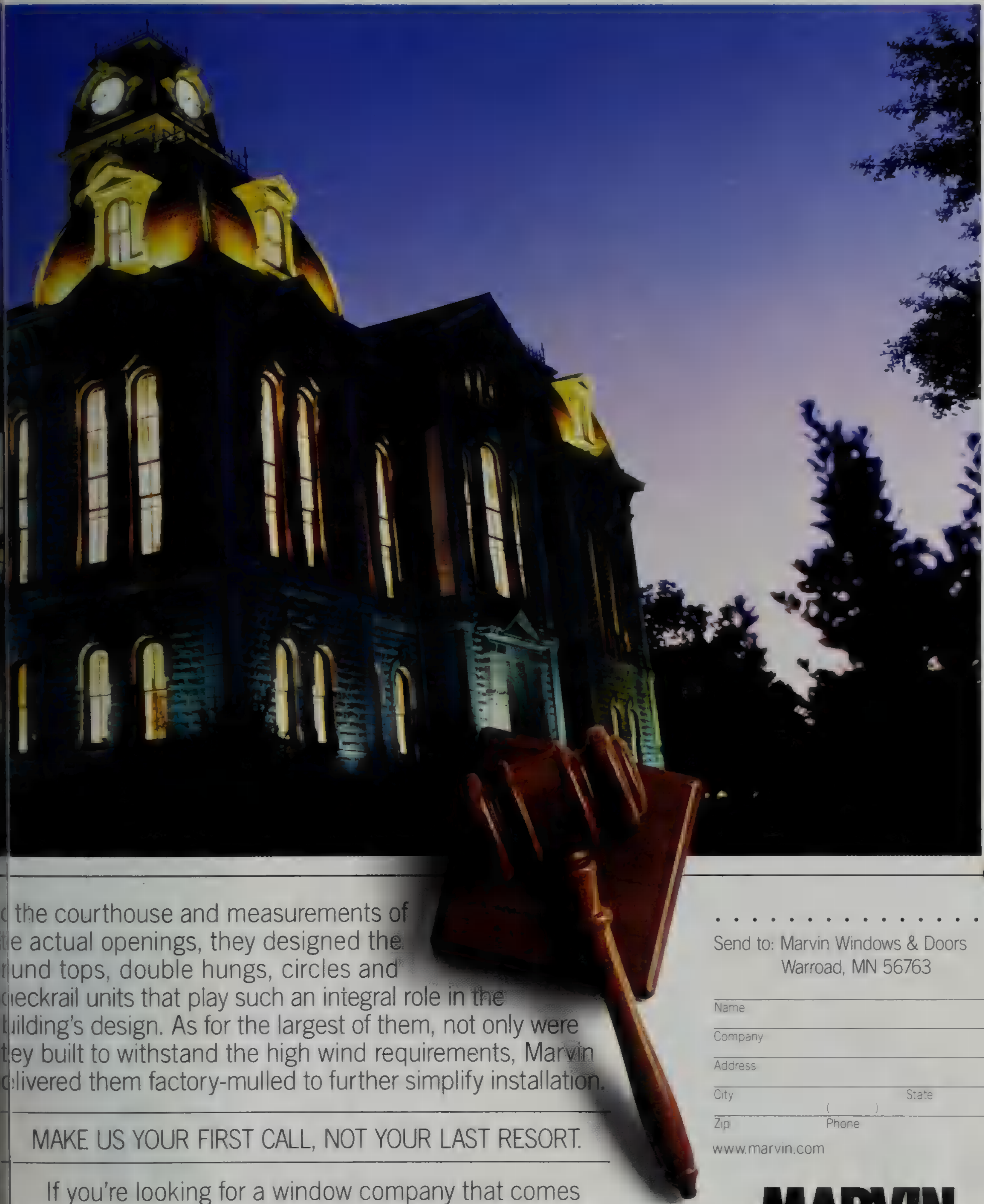

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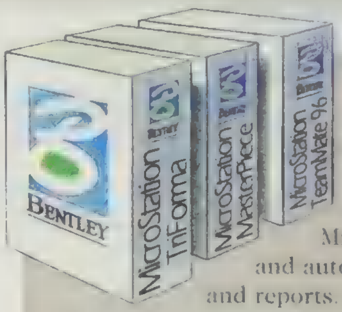

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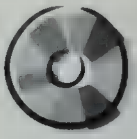

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ARCHITECTURAL RECORD **12/1996**

) Timothy Hursley

Iiller SQA's "street" unites assem-
ly and office areas.

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ontinuing Education

'his month, the Building Types Study, pages
3-49, is eligible for AIA/ARCHITECTURAL
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redits. See page 165 for instructions.

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Letters

The Boldness Gap

Robert Campbell's article [*Why American Architecture Has Lost its Boldness*, pages 76-79] in your November issue is the stuff that our journals should provide: less of the glitzy and arcane reviews of recent febrile efforts at making architecture and more of a forum of ideas and criticism. Lack of boldness is due to characteristic American values, notably our rooted anti-intellectualism and an ingrained pragmatism; grand projects are only achievable if they can be quantified and/or measured in dollars. Vision and practicality in our society is inseparable.

The ability of Moneo and others to realize great projects at a relatively early age is due to a European culture not rooted in practicality alone; it is a culture that also accepts the intangible rewards of public civility, abetted by governments that implement grand public projects.

Post Modernism could only have found fertile ground in America; it was, after all, a pragmatic response to everyday issues of expediency, economy, and pandering to popular taste. We Americans are only inspired by great public issues and our best architecture is a response to demanding times. Witness the rebuilding of Chicago twice, first after the great fire in 1871 and second after World War II. Without a passionate cause our architecture becomes self-indulgent and moribund.

Gertrude Stein claimed that [illegible] the oldest country, [illegible] was the first truly [illegible] on: other countries [illegible] our mistakes [illegible] alitarianism [illegible] are now [illegible] and America's lack of boldness may soon be found elsewhere. In this context, what Robert Campbell sees in the work of Moneo and others is akin more to our past and not a preferred future.
James A. Gresham, FAIA
Tucson, Arizona

What a splendid article. Robert Campbell makes excellent points. As a newcomer to American architectural education arriving from practice with Arups in London, I have a great deal of sympathy with such views. At Michigan, we are making a few moves in our curriculum and also in links with practice publications. It would be good to have an opportunity to talk with Mr. Campbell.
Brian Carter
Chair, Architecture
The University of Michigan
Ann Arbor

As usual, RECORD has done a fine job of providing a forum for ideas in its November issue. Robert Campbell's musings on the wimping-out of American architecture have real validity when it comes to 2-D appeal (or lack of same) in magazines.

But what are the hidden costs of "cheap-thrills" architecture? In looking at the Leipzeig Glass Hall [pages 80-89], there are stark realities present. Umteen gazillion perforations of a roof to facilitate sexy structural expression look really neat. But when there are pseudo-techo sketches depicting the project's environmental "sensitivity," there is a classic case of rationalizing the indefensible. It is very easy to throw stones at this glass house—for heat loss, visual distraction in an exhibit space, unlimited maintenance costs for an uncovered-steel structure.

Continued on page 144

Calendar

Through December 15
The drawings of Louis Kahn ar on exhibit at the Jewish Museum, New York City, and include architectural drawings and models surveying Kahn's synagogue projects. Call 212/423-3271 or fax 212/423-323

Through January 5
Vernacular Architecture in American Folk Art is the subje of an exhibit at the Museum of Folk Art in New York City. Curator Stacy Hollander has selected some 100 paintings, sculptures, furnishings, needleworks, and other decorative-art objects from public and private collections to document the structures that shaped the earl American built environment. Call 212/977-7170 or fax 212/977 8134 for more information.

Through January 12
"The Architecture of Santiago Calatrava" moves into the Milwaukee Art Museum (MAM) with an exhibition that will include models, drawings, and photos of the Spanish-born arch tect and engineer's major works. Calatrava's first completed project in the U.S., scheduled to open in 2000, is an expansion of MAM. Call 414/224-3240.

January 19
"Three Buildings by Frank Lloy Wright: American Spirit Alive in Japan" traces the history of the only three non-U.S. buildings Wright designed and built: the Imperial Hotel, Yamamura House, and Jiyu Gakuen Myonichikan School. At the National Building Museum, Washington, D.C. Call 202/272-2448 or fax 202/272-2564.

January 22-26
The National Association of Home Builders Convention in Houston will include an AIA Housing PIA (Professional Interest Area) slide presentation of the top 25 architect-designed

Continued on page 143

The Case for Steel Windows & Doors.

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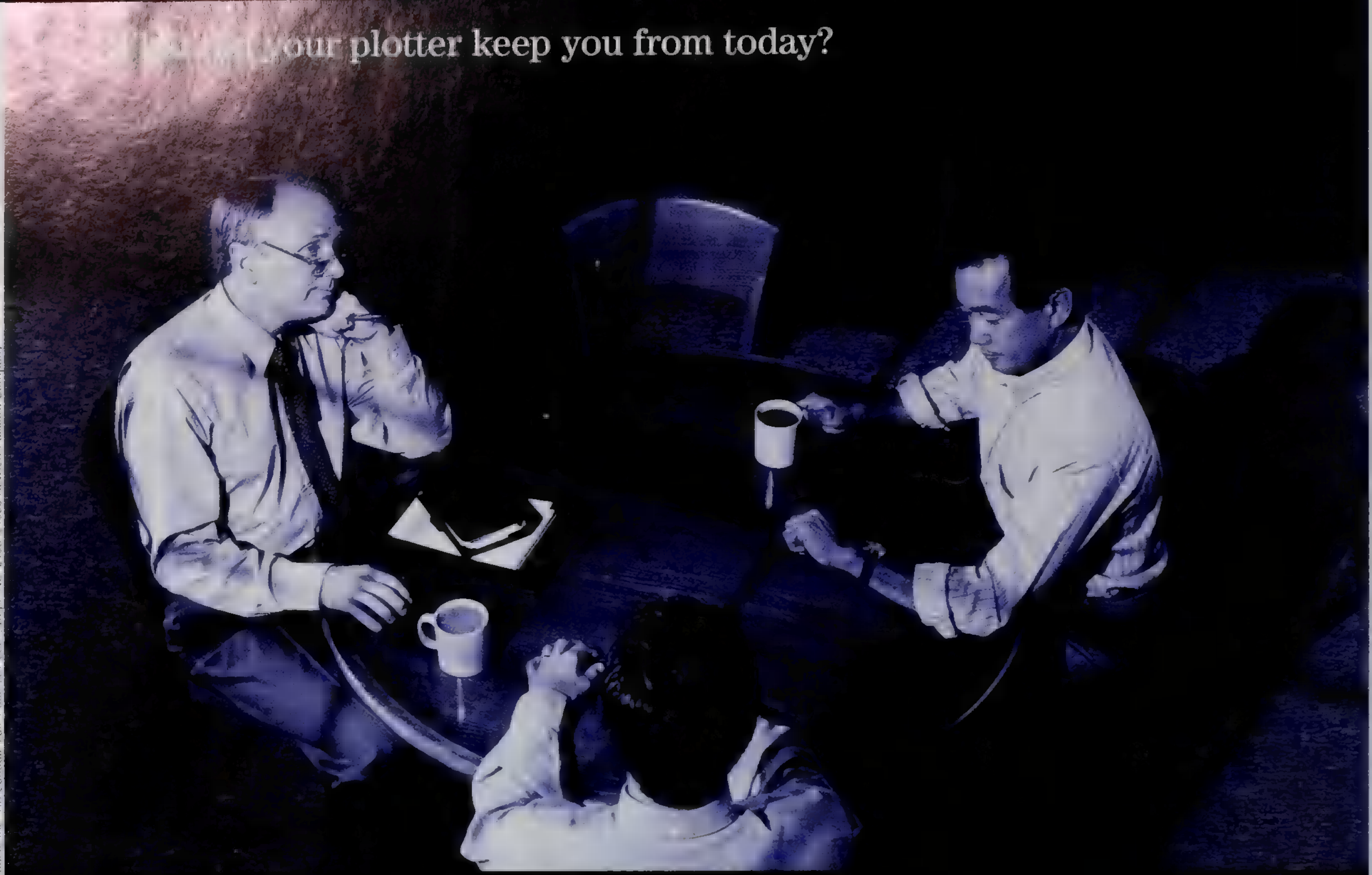

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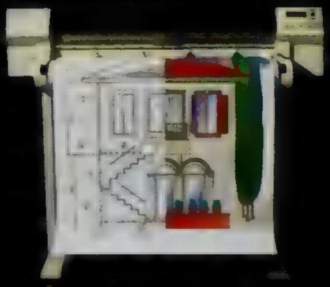

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From the Promenade:

© Charles Linn

The view from the Promenade near my new home in Brooklyn Heights may be New York's finest: the city and its waterfront snap into perspective from across the river. Manhattan's proud towers cluster, then crash toward the water's edge, their juncture fragmented into a splayed collar of docks and piers, cafes, and bubble-topped tennis courts. From this distance, the city looms whole and iconic, the culmination of heroic materialism. The architecture takes your breath away.

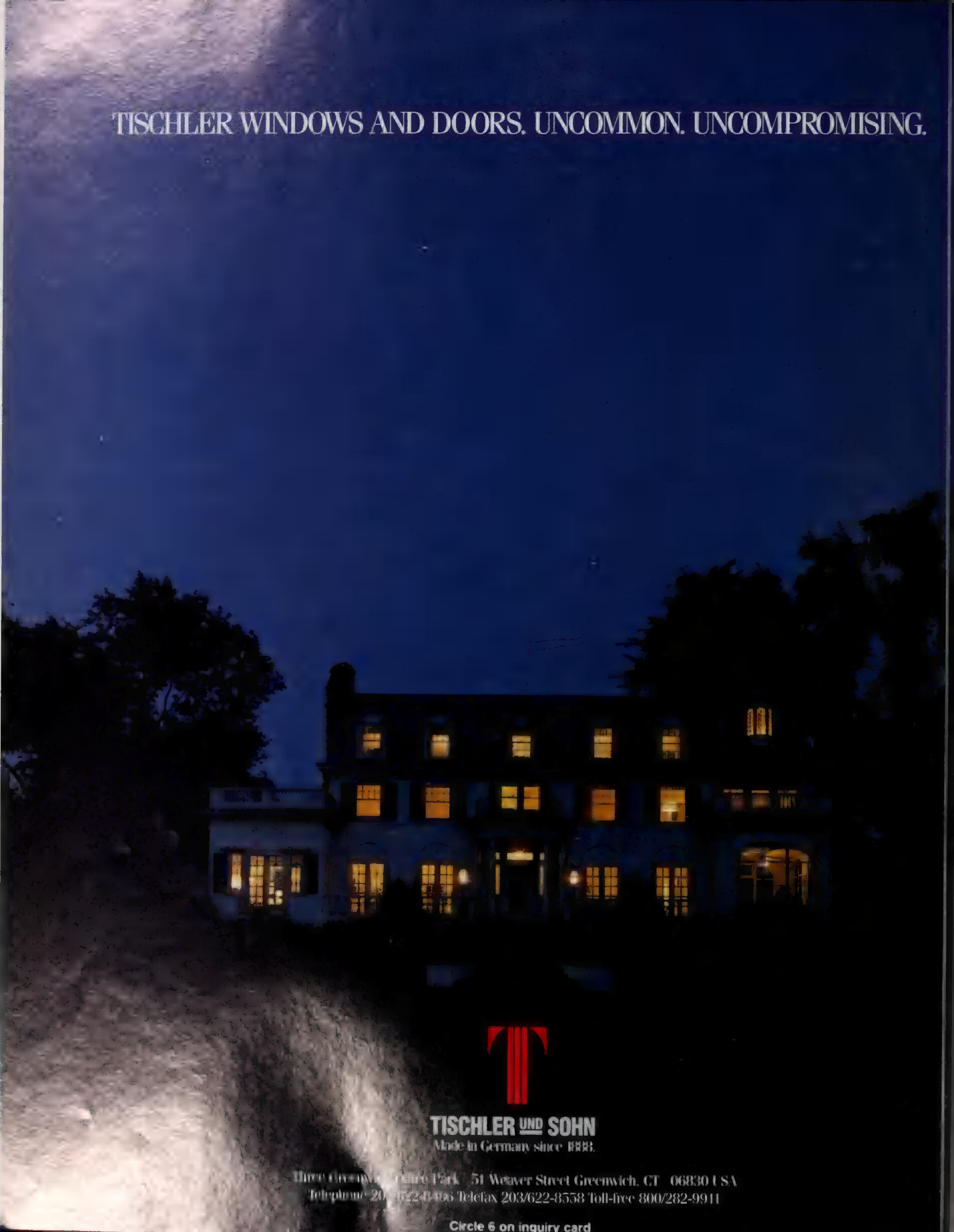
The view from the new riverside park in my hometown, Columbus, Mississippi, is more languid. It is amazing that the river is apparent at all. For fifty years, the water's edge lay hidden behind scrubby undergrowth and scattered debris, unapproachable and walled-off below a wonderful, rumbling bridge. Things began to change when a friend of mine, a local architect, stared down at the clutter, rolled up his sleeves, and helped improve the community's perception of itself.

The park did not happen overnight; the idea percolated slowly in one person's consciousness. The genesis of the idea emerged twenty years ago, after my friend had moved back to Columbus from a successful partnership in an urban firm. He did what many architects do: he established a small practice, joined the civic clubs, acquired clients, sat on tedious zoning and planning boards, made buildings, fought for historic preservation and for his downtown. He also realized, with a singular vision, that the riverfront, which lay ninety feet below the main street, deserved to be shared.

Ironically, my friend didn't design the new park. Someone else got the job, but the service he performed was just as vital: he framed the debate that made it possible, then fought for the improvements. The mayor, others in government, and local developers attended a forum the architect and his friends helped sponsor. The river's unfulfilled promise was apparent. Ultimately, after months of meetings and consensus building on the city's and the architect's part, the town's leadership called for change. What began in an individual's commitment broadened into shared vision and collaboration. Today, the park is nearing completion--a modest, humane public space at the community's front door.

There is differentiation of scale, but no hierarchy of values between the two riverfronts. Both count. The small town story is explicit; the city's, exceedingly complex. Whether in sparsely settled mid-America or across the East River, by one architect or a larger group, small actions are additive, weaving community with a seamless effort, uniting those who care about and are committed to the built environment. The little park, as much as the great riverfront, bears witness to design's transformational power for us all.

It is seductive, from the Promenade, to marvel at the city's buildings, the monumental artifacts of human ingenuity and will. However, sometimes the overlooked story is not what architects build at all, but in the influence of their ideas, commitment, and efforts, in my hometown or your own. *Robert Ivy*



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Pakistan

14th Century Baltit Fort Is Transformed Into Cultural Center

Following a multimillion dollar restoration project, Baltit Fort, one of the most impressively situated and architecturally innovative Medieval castles in the world, has been transformed from a graffiti-riddled, crumbling heap into a museum and cultural center. The new complex will be the focal point of the economic, social, and cultural development of the historic village of Baltit, renamed Karimabad to honor the Aga Khan, whose trust funded the project.

The fort, located at the top of a natural amphitheater in Pakistan's high Hunza Valley, was begun in the 14th century by the ruling Mirs, as a compound of houses with a defensive tower. They found its location ideal—not just because of the ample water supply (essential since the entire valley floor is a mountain desert), but because it was close enough to the Silk Road to raid the trading route. The Mirs used the booty to fund the expansion and improvement of the fort 70 times over 700 years. The last alterations were completed in the early 20th century, when the entire top floor was transformed into a palace. After World War II it remained empty and unmaintained until this present restoration.

According to Jack Kennedy, a spokesperson for the Aga Khan Trust for Culture in Geneva, Switzerland, architects found the structure, though decayed and near collapse, a masterpiece of craftsmanship, thoroughly adapted to site, climate, and function. Its wood construction was conceived to resist earthquakes, a frequent event in the region. During the renovation, original construction techniques and materials were used for repairs whenever possible. In some instances, advanced technology was introduced, such as tie-ropes and geo-mesh soil stabilization, to remedy serious structural problems. Young architects and engineers involved in the project were provided with training in international conservation standards at York University in England and at UNESCO's International Center for Conservation in Rome.

©Aga Khan Trust for Culture

While the museum/cultural center opened in September, the demonstration development project in Karimabad continues as the local community struggles to manage infrastructure problems and environmental pollution. A planning office is also involved in the renovation of historic stone houses, the introduction of modern sanitary facilities and basic services, and the development of guidelines for new houses, shops, and hotels.

The historic Cities Support Programme, an arm of the Aga Khan Trust for Culture, is part of the Aga Khan Development Network, a group of nonprofit institutions working to improve living conditions in specific regions of the developing world.
Katherine Kai-sun Chia & Julie Moline

Miami

Architects Plan to Help Rehabilitate East Little Havana

The University of Miami School of Architecture and the School of Medicine's Center for Family Studies are collaborating to rehabilitate East Little Havana, Miami's poorest neighborhood.

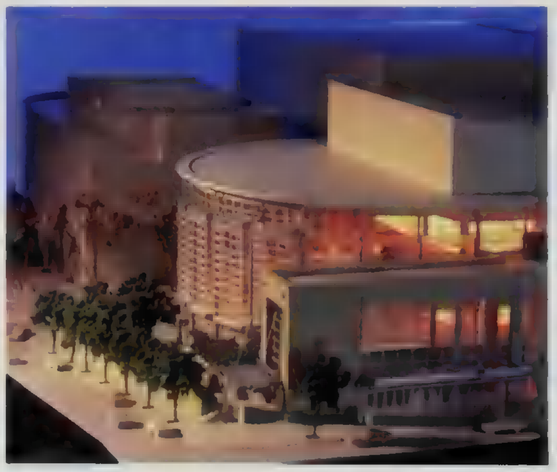
The project, funded by a $600,000 Henry R. Luce Fellowship, also involves faculty from the University of Miami's schools of business, education, and law. The schools plan to concurrently regenerate the architectural environment, spur economic growth, and maintain the ethnic character of this predominantly Latino neighborhood.

East Little Havana was chosen, said Miami architecture dean Elizabeth Plater-Zyberk, because the university's Center for Family Life had already established a beach-head there. The Center is headed by Jose Szapocznik, a professor of psychiatry and behavioral sciences who has been recognized for his work in family-based interventions in troubled inner-city neighborhoods. "We found strong parallels in how social scientists think about the relationships of individuals and families to the larger community context, and the way architects and urban designers approach individual buildings and neighborhoods in their larger urban context," said Plater-Zyberk.

Preliminary architectural plans call for the rehabilitation of houses, the rerouting of traffic to facilitate a more peaceful pedestrian life, and the conversion of an abandoned warehouse into a crafts market where local artisans would be able to showcase their work. On the social services side, plans call for the development of parent-training programs, venture capital for small business development, and the creation of on-site legal services. *Beth Dunlop*

Department store to be opera house
The Washington Opera is planning to adapt the eight-story 500,000-sq-ft Woodward & Lothrop department store in Washington, D.C., into an opera house, ready for year 2000 when the lease expires on its current home at the Kennedy Center. Architect Harry Weese Associates and theater consultant Schuler & Shook developed the $200 million preliminary retro fit proposal for the 100-year-old department store. The design architect has not yet been named.

New hall for the Seattle symphony
Loschky Marquandt & Nesholm Architects of Seattle has begun construction on Benaroya Hall, a $109 million, 187,000-sq-ft concert hall for the Seattle Symphony scheduled to open in 1998. Owned by the City of Seattle, the main auditorium will have a seating capacity of 2,500 while a smaller hall will hold 540. The design includes a grand semi-circular lobby with sweeping views of Puget Sound, the Seattle Art Museum, Veterans' Memorial Garden, and the downtown skyline.


© Mike Zens

Benaroya Hall

N.J. college to get recreation center
Maria C. Romanach Architect has been commissioned by the Richard Stockton College of New Jersey to design a $15-million 70,000-sq-ft multi-purpose recreation center. The facility, slated for completion in 1999, will include a gymnasium/field house for indoor and outdoor sporting events, as well as assembly space for 5,000 students.

Raab named CEO of New York agency
Martin D. Raab was named president and chief executive officer of the New York City School Construction Authority. Formerly a partner at Haines Lundberg & Waehler, he [illegible] to head the agency. ■

New York City

New Housing Prototype for Homeless

In the Bronx, one of the first two special-needs buildings from Gran Sultan. Extras, like two-[illegible] block walls, make the interiors look less institutional.

A new prototype for housing the mentally disabled homeless is generating nationwide interest as a cost-effective, user-friendly model for special-needs housing, including residences for AIDS patients, battered women and their children, and the elderly.

As part of a demonstration program conducted by the New York State Office of Mental Health and the Corporation for Supportive Housing, Gran Sultan Associates of New York is building 200 units in four buildings in Brooklyn, the Bronx, and Manhattan for homeless adults in recovery from substance abuse. The 40-55 unit buildings, a cross between a traditional SRO-type dwelling and community residence housing, are designed to offer comfort, privacy, and independence. The facilities also provide a group dining room, lounges, offices for social service agencies, and on-site laundries.

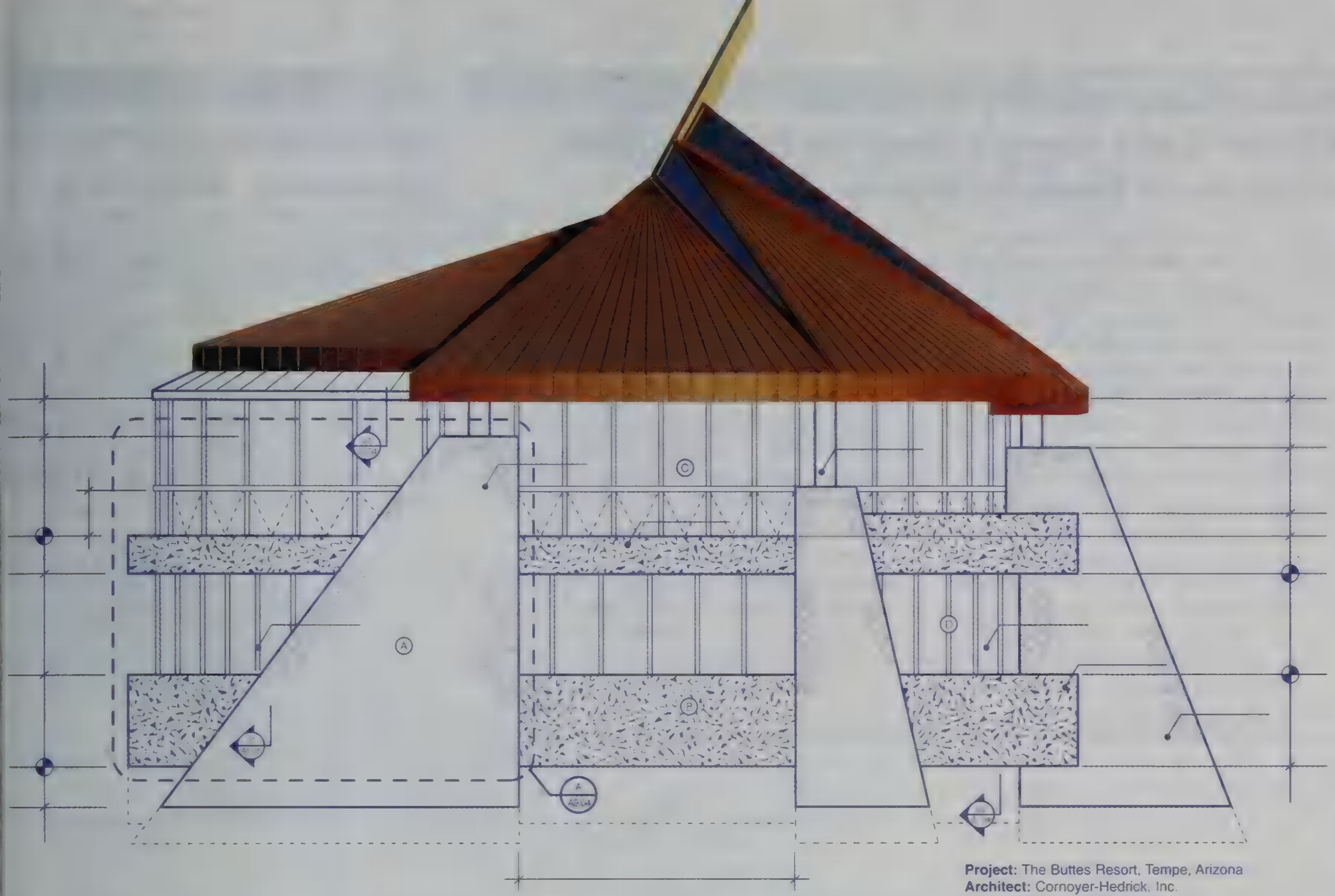
The two buildings now open are getting the thumbs-up from residents and from social service agencies, which find them cost-effective to build and maintain. Time Magazine hailed Warren Gran and Joe Sultan as "local heroes." Forty-six year old Edwin P. Alacios, a resident since July, said, "When I saw the apartment I decided I had to change the rest of my life. It made me feel responsible." Architect Sultan said the SRO apartments cost about $62,000 to construct, and maintaining a resident costs about $10,000 a year. The tab at a mental institution averages around $100,000 per person per year. The units are small (255-sq-ft) but self-contained, with separate areas for sleeping and eating, a kitchenette, and private bathroom. The buildings were designed not to look cheap or institutional. "We used six different tile colors, 10 different paints, and mixed them up to make each apartment unique," explained Sultan. "A lot of people think that if you give a homeless person anything, it's better than nothing. But it isn't. People are waking up to the fact that stability in housing equates to stability in treatment, and ultimately to integrating people into the community." The design manual is available through Gran Sultan Associates, 212/206-1560.
Julie Moline

St. Louis

Managers Picked for Add to Airport

The City of St. Louis has selected project managers Sverdrup/Parsons/Kwame for the proposed $2 billion expansion of Lambert International Airport. The 15-year program will increase capacity and provide for improved all-weather operations for Lambert, one of the 10 busiest airports in the U.S. The selection process involved 11 team proposals and site visits to several cities. Construction is expected to begin in 1998.

Svedrup's aviation group has managed expansions at nine of the nation's 20 largest airports, including current work on a major expansion in Detroit. The Lambert proposal calls for a third parallel runway to allow for all-weather operation, a 2,000-foot runway extension, 20-25 new passenger gates, bringing the total to 100-105 gates, a new 1.3-million-sq-ft terminal, 6,200 new parking spaces, and a new people-mover system. ■



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Ship Harbour, Nova Scotia

Straw Bale House Design Earns Code Approval Even in Damp Climate

The owner/designer of a 1,500 sq-ft plastered straw bale house in Ship Harbour, Nova Scotia is proving that straw bale construction can be adapted to a damp climate. Completed in November, 1993, Kim Thompson's two-story home was the first code-approved, load-bearing building of its type in Canada.

The house was built with three-foot overhangs in a sheltered site, with the bales placed a minimum of eight inches above grade. Cement stucco on the interior and exterior walls and the absence of a vapor barrier render the building breathable. A vapor barrier installed underneath the straw bale floor to stop the rising damp has become the house's only weak spot for moisture penetration. Thompson now recommends that a heavy screen be used in its place.

The two-string bales (14in.by 18in.by 36in.) have an R-value between 30 and 40 during the winter, which is twice that of 6 in. fiberglass in wood frame construction. Thompson says she heats the house by burning four-and-a-half cords of wood annually in an airtight wood stove. The National Research Council and the Technical University of Nova Scotia monitored humidity, insulation, and strength of the walls for a two-year period. Thompson has made the results available in The Straw Bale Handbook. Architect Jennifer Corson, principal of Solterre Design of Halifax, coordinated the testing program and co-wrote the handbook. Straw bale is an excellent option for homeowners who want hands-on involvement in construction, according to Corson. It is also the most energy-efficient material available to complement a passive solar design, she says. However, straw bale is not recommended for either fast track or modular projects. What makes straw bale so environmentally friendly, says Corson, is that it makes use of an annually renewables; naturally growing product that's normally burned at the end of the season.

Interested parties can use the Internet news group, http://www.solstice.crest.org.strawbale, or order Straw Bale Construction: A Manual for Maritime Regions. Phone: 902/845-2750; E-mail: aa983@chebucto.ns.ca) *Andrew Safer*

U.S.A.:

Amtrak Seeks To Upgrade Stations

Amtrak has provided seed money to create the Great American Station Foundation, a non-profit organization established to promote and facilitate the renovation of railway stations throughout the U.S. The foundation will form financial and technical partnerships with communities to help them rebuild and revive stations, creating both transportation hubs and magnets for business activity in the center city.

The foundation will provide grants and technical expertise, including architectural design assistance, intermodal planning, engineering guidance, and community organization strategies; convey best-case practices and help plan and design a successful retail environment in a renovated station.

Members of the founding board of directors include Richard Moe, president of the National Trust for Historic Preservation; Ellen Guidera, vice president for business development, Disney Consumer Products; Thomas Downs, president, chairman and CEO of Amtrak and David Burwell, president, Rails to Trails Conservancy. ■

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Has American architecture lost its boldness?

According to Pulitzer Prize-winning critic Robert Campbell, the architecture in other countries, particularly countries in East Asia and Europe, is bolder, more intense, and more daring. By comparison, he says, American architecture looks weak and confused [Architectural Record, November 1996, p. 76]. Campbell is not criticizing American architects per se, but rather the cultural, political, and economic environment in which they work.

Do you agree that American architecture has lost its boldness, or do you disagree.

○ **Agree** ○ **Disagree**

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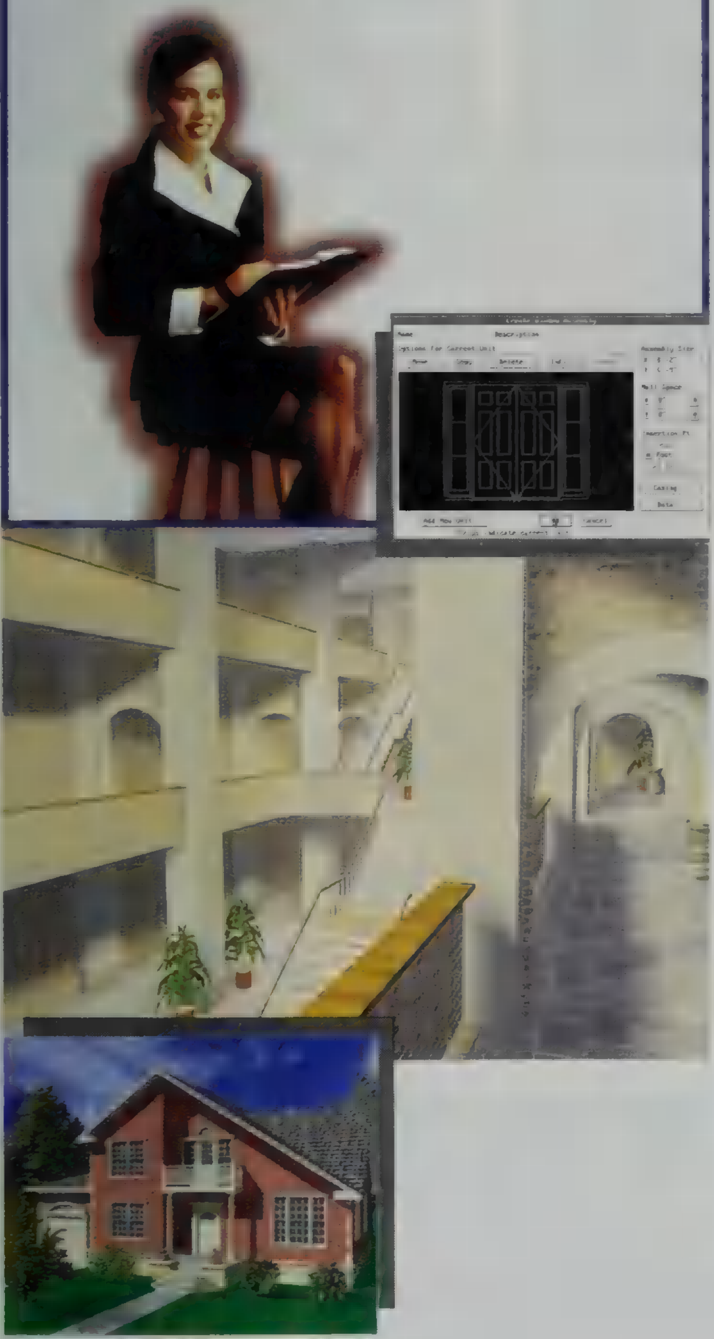

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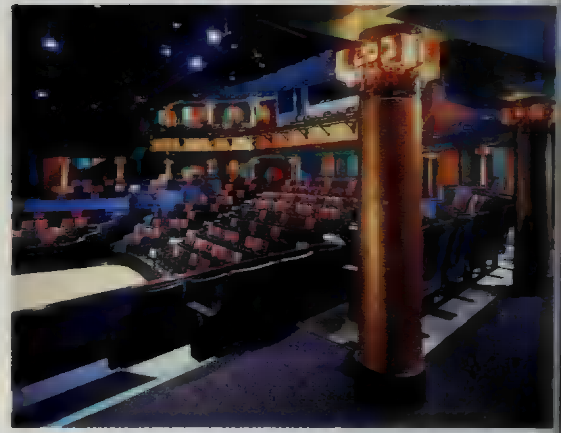
Historic Eagles Auditorium Renovation Is Completed

Seattle-based Callison Partnership and a local repertory company, A Contemporary Theater (ACT), have completed the transformation of the Eagles Auditorium into a new performance complex. The old auditorium, an historic landmark building erected in 1925 for the Fraternal Order of Eagles, had been abandoned for years despite its prime location adjacent to the Convention Center.

The new interior configuration includes a traditional theater and a theater-in-the-round arena stacked in the center of the existing building. A flexible cabaret space is located in the basement. Public spaces are located on the windowed street side; support spaces are located on the blank wall of the adjacent building. The four upper levels are reserved for the Seattle Housing Resource Group's affordable housing program. Callison took care to maintain the historic features of the original building. New stairs and support areas blend in with the original decor; much of the extensive technical lighting and sound equipment are suspended in the space from a massive steel armature to avoid touching the original fabrics and wall coverings. A skylit lounge at the top of the building, surrounded by scene shops, design studios, rehearsal room, conference areas, and an outdoor terrace area, was designed as the theater company's "living room" to facilitate interaction between performers from different troupes. The theater's opening generated enough income to allow Callison to design a new street canopy that gives the refurbished landmark a strong street presence.



The Fraternal Order of Eagles built 1925 (left) and one of two new theaters built in its space.

Katherine Kai-sun Chia

News continues

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Winston-Salem, N. C.

New Arts Buildings Serve As Film Sets

The new $15-million School of Filmmaking at the North Carolina School of the Arts in Winston-Salem is expected to open its doors in September 1997. Designed by Lee Nichols Hepler Architecture of Charlotte, N.C. in association with Backen, Arrigoni, and Ross, Inc. of San Francisco, the 62,000-sq-ft facility consists of three main buildings housing sound stages, an underwater tank for filming, editing and sound studios, and classrooms. Each building facade represents a different architectural scenario, including a rustic mountain cottage, a Louisiana Low Country house, a southern California ranch house, and a New England salt box cottage, so that film students will have a variety of backdrops at their disposal. The construction of a small-town main street, complete with retail shops, a municipal building, and an Art Deco theater marquee, will also serve the school and its alumni. ■

Orange County, Fla.

$2.5 Billion School Expansion Program

The School Board of Orange County, Florida has been asked to approve the selection of Heery/Sverdrup as program managers for the planning, design, and construction of a $2.5 billion school expansion program, the largest ever for a public school system in the U.S.

Orange County, one of the fastest-growing school districts in the nation, needs at least 37 new schools over the next 10 years plus extensive renovation of existing buildings, according to David Wofford, Orange County's associate superintendent for Facilities and Transportation.

Heery/Sverdrup, based in Maryland Heights, Missouri, was one of seven groups that participated in a national competition for the contract, and was ranked first by seven of the nine committee members. Work is expected to begin in January, 1997. ■

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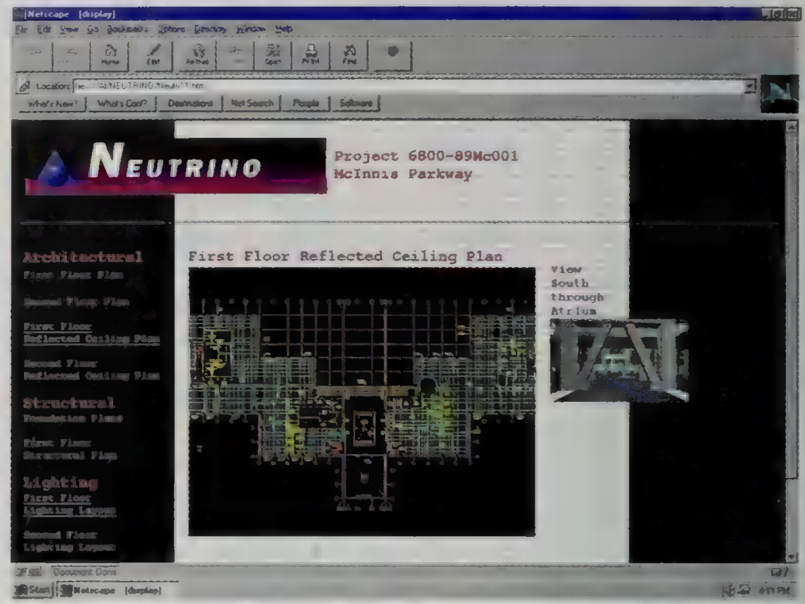
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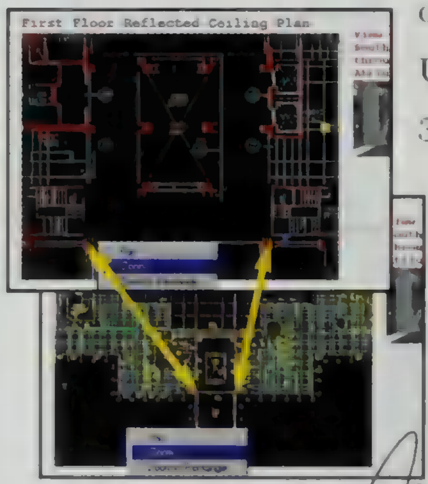

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Building Types Study 744/Knowledge-Based Production Facilities

Architects have become more important to industrial companies as facilities increasingly need to blur lines between production and front-office functions, such as design, sales, and management.

Manufacturing Collaboration

The clients for the projects shown in this building type study are flouting the broad movement in business to outsource or send employees home to work. They are instead putting people together: factory workers with engineers; R&D with sales. Computer hardware and software companies are leading the way because they are caught in a competitive vice. They must turn out higher and higher quality products on excruciatingly short turnarounds, which means they must lure the best staff and ensure that huge teams work together efficiently.

"Knowledge-based production," is what they call it when engineers help iron out production glitches and line supervisors advise designers. And it is not confined to computers. With cleaner production processes and more hands-on management, it is easier to blur the line between manufacturing and front office. In so doing, companies learn that the generic office building or the windowless builder's-catalog box they used in the past no longer work.

There are common traits that emerge from companies leading this charge. Reorganization is a fact of life, so the ability to flip space from office to manufacturing (and vice versa) is a virtue, as well as the ability to quickly add new facilities or lease unneeded space. Budgets remain close to low-end manufacturing norms, so bare-bones offices are often enlivened by low-cost amenities like daylighting. On the other hand, these companies are upgrading production areas with skylights, natural ventilation, and windows to landscaped views. Companies see these amenities as improving productivity and retaining valued staff. Fitness centers, well-appointed meeting places, and carefully situated and attractively designed coffee bars, break areas, and food-service areas not only express a company commitment to staff, they encourage needed collaboration and solidarity among workers who traditionally operate in separate spheres. Impetus for such amenities may come from the top: the fitness centers and greenery reflect the interests of these companies' often-youthful leadership.

Style is increasingly important. Company logo-ware is sold in appealing stores; retail-style training centers speak to motivated potential employees; expressive buildings are a form of advertising to passersby. It's too early to know how many companies will embrace these trends. Suffice it to say it's a heady time for the architects involved who see an increasing valuation of their skills by the nation's most innovative businesses. *James S. Russell*

Continuing Education

This Building Types Study is this issue's installment of the AIA/ARCHITECTURAL RECORD Continuing Education Series. You can receive continuing-education credits by studying the learning objectives below, reading the introduction this page and the case studies through page 49, answering the questions on page 165, checking your answers, and returning he self-report form, page 166.

Mark Scher is AIA Director of Continuing Education Programs and Products.

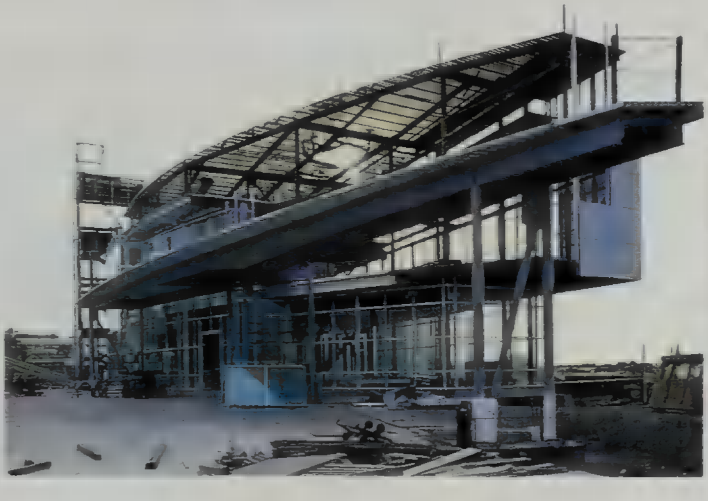
Learning Objectives

After reading the Building Types Study and completing the exercises, you will be able to:

- List six programmatic influences hat enable increased worker interaction and cooperation, and give at least three examples of how the project designers responded.
- Describe at least three benefits of hese new designs that companies are monitoring to determine whether they hould be more widely implemented.
- Identify at least eight environment-related design elements used in the profiled designs.

Manufacturers' Sources isted on page 142

Studios Architecture has become a leader in the design of expressive facilities for high-tech companies. Right, construction at Silicon Graphics' new headquarters.

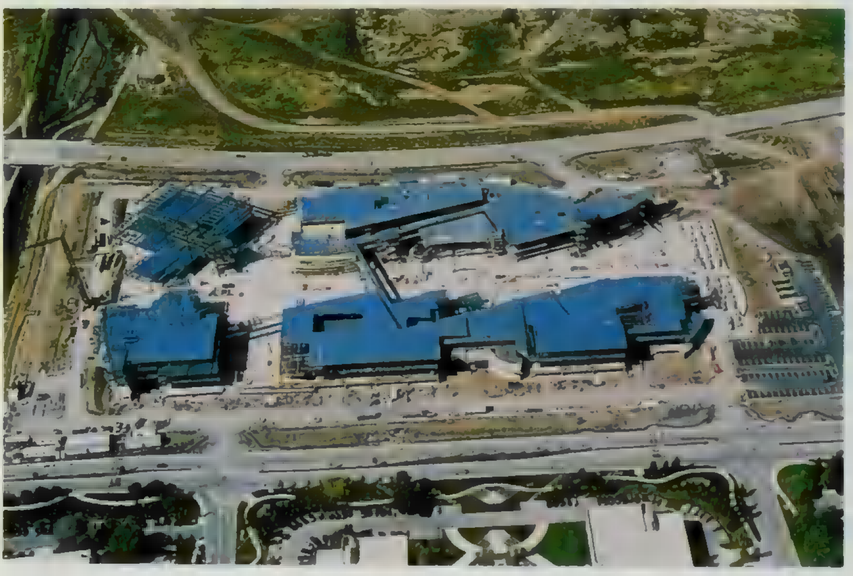


© Michael O'Callahan/Studios Architecture

Though projects for computer companies lead the new integration of factory and office (these pages, 3Com following), other projects profiled in the following pages are for clients ranging from telecommunications giants to carpet manufacturers.

Project: Silicon Graphics, North Charleston Site, Mountain View, California
Architect: Studios Architecture
Concept: The architect worked with the community so that the site not only houses corporate headquarters and R&D facilities, but also accommodates a public park and cultural center. The four buildings include such amenities as a restaurant, fitness center, and theater. They are configured to create internal courtyards and are connected by glass bridges. The expressive elements unite disparate uses and break down scale.

Intimate courtyards and upper-level bridges make it easy to get around the sprawling 500,000-sq-ft campus.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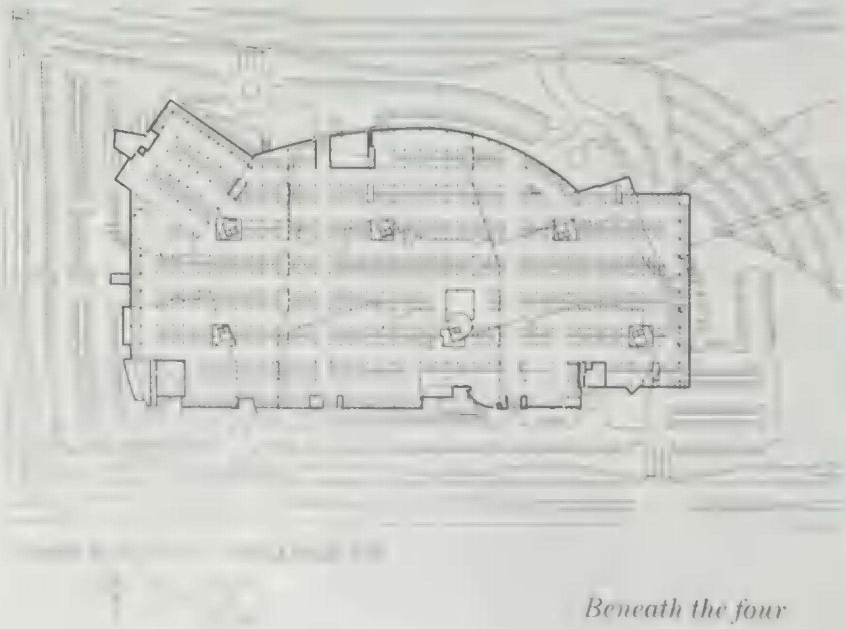
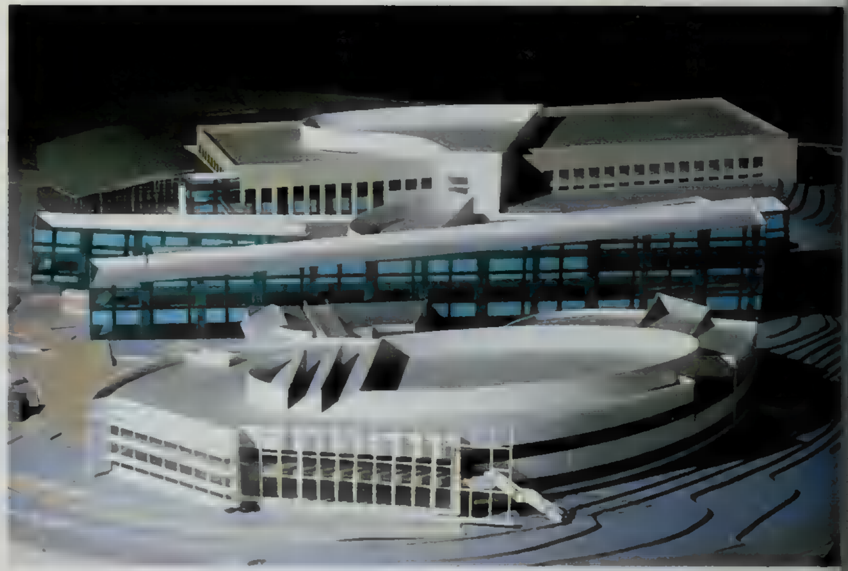
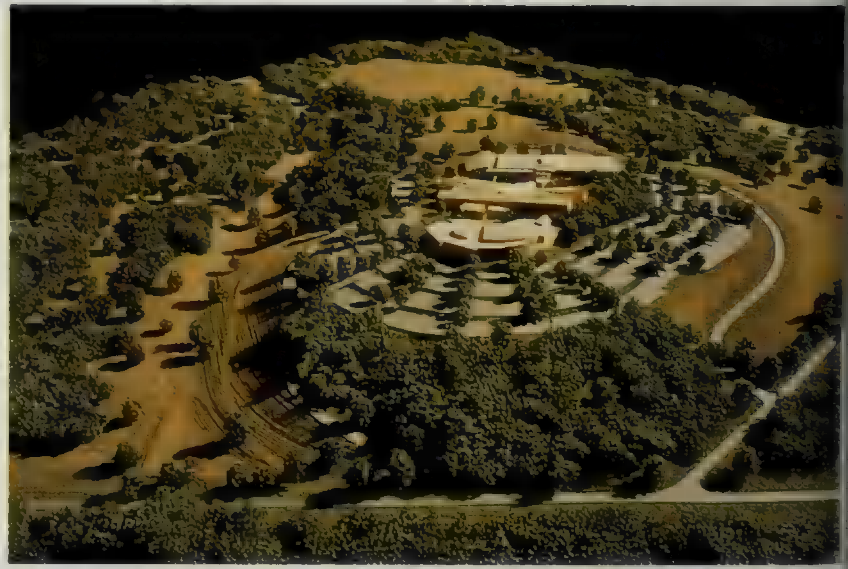


Beneath the four buildings, a one-level structure parks 1,000 cars.

Project: Fore Systems, Warrendale, Pennsylvania
Architect: Studios Architecture
Concept: A fast-growing startup company that designs and manufactures computer-networking products is building a new headquarters outside Pittsburgh. The 300,000-sq-ft complex of two-story buildings is linked by bridges on a 67-acre wooded site. Building cutouts and sunshade-protected protrusions bring daylight deep into the large floorplates. If growth continues, a master plan allows the company to double the square footage.

In models, an administration building is in front. Behind, buildings for engineering and manufacturing.





roject: Sun Microsystems,
enlo Park, California
rchitect: Backen Arrigoni & Ross
oncept: A 1-million-sq-ft campus for a omputer maker is focused on a residentially caled and detailed internal street. The nagery reflects the non-corporate style of his young company. The street is a venue for requently-held outdoor celebrations. Flexible ayouts were critical because the company, ke many others in the field, often can't know hich groups will occupy a building until onstruction is well underway.

Outdoor spaces are seen as extensions of internal workspaces (below). Site plan allowed buildings to be added as needed.

Project: Hewlett Packard,
Roseville, California
Architect: Bottom Duvivier
Concept: To permit rapid expansion for this maker of computer output devices, the building was conceived and constructed as a kit-of-parts. The owner can add modules of space without disrupting occupied areas. The steel-framed system is used for production areas and offices. When making changes or adding space, the company alters only as much of the modular internal and external bay system as is needed.

Skylit zones between modules (left) define major circulation routes. They are punctuated by planted informal meeting areas. The external panel system (below) is readily removable.

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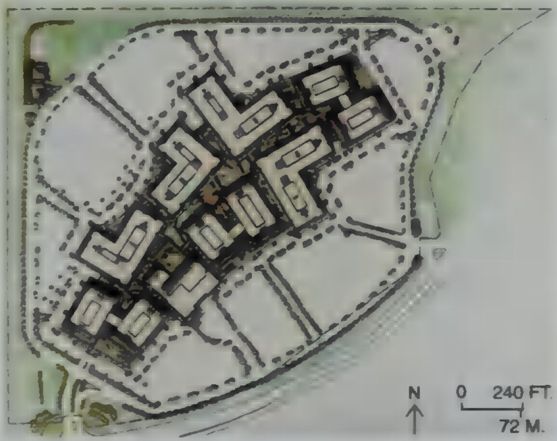
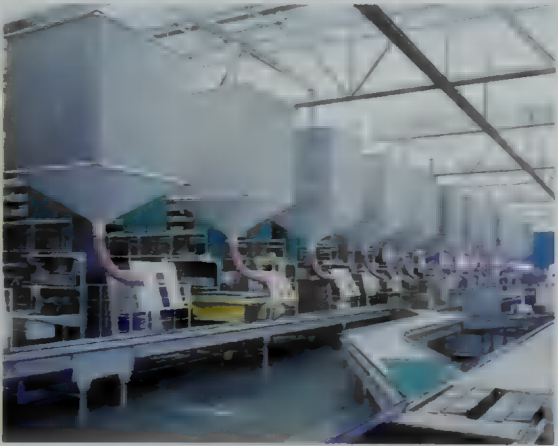
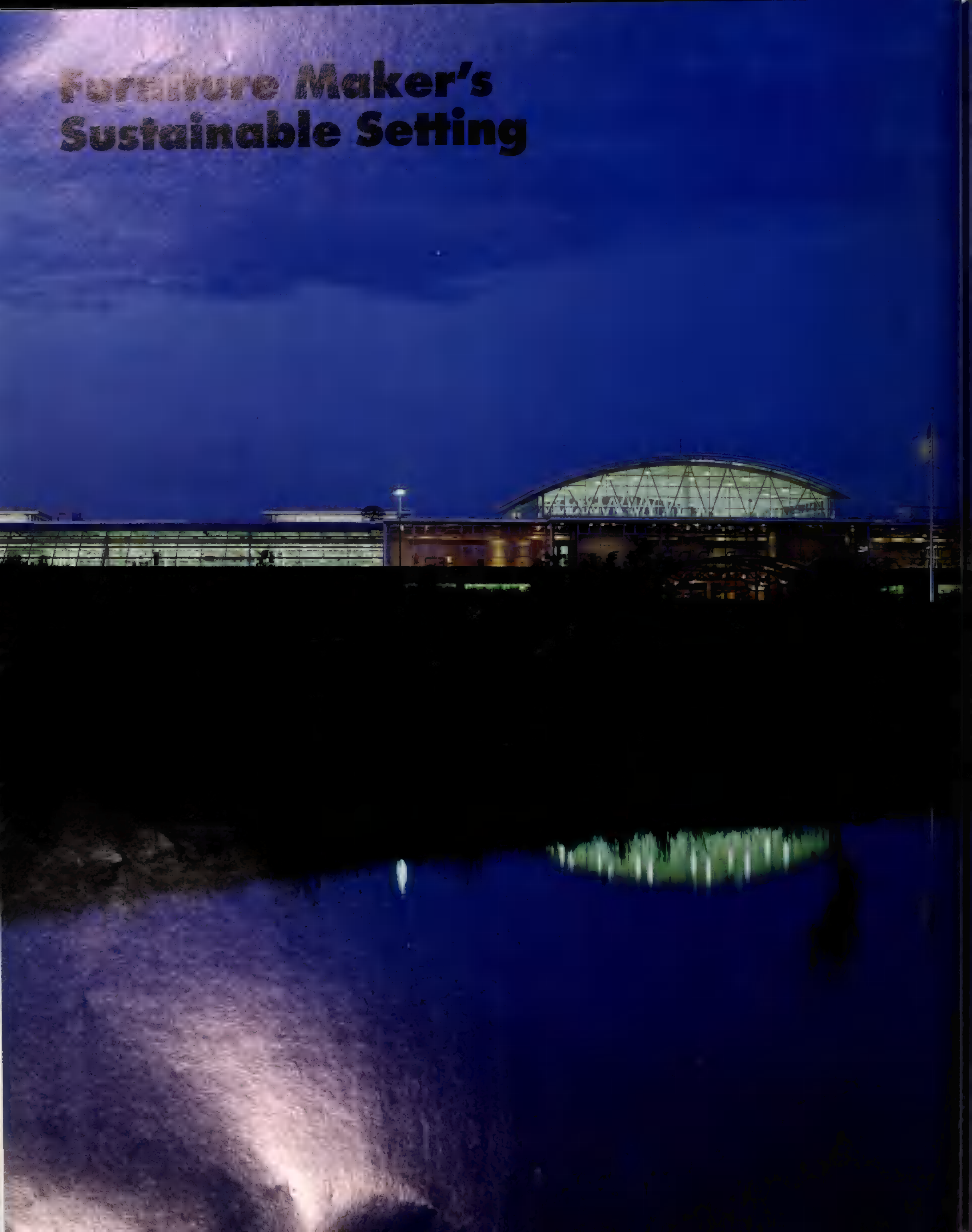
esides offices, labs, nd engineering cilities, Sun built ining areas, ardens, and a tness center.





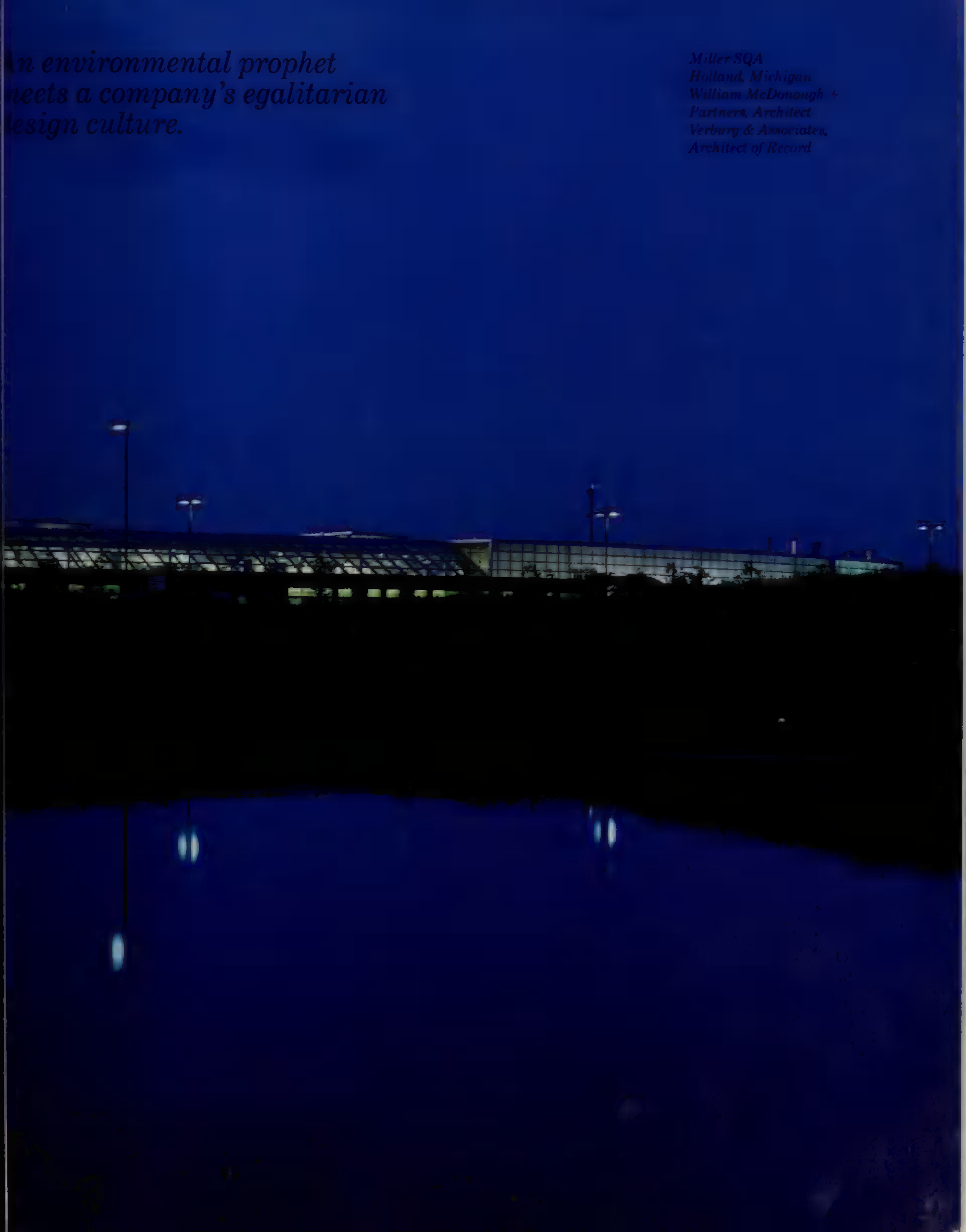
The straightforward truss-framed modules accommodate a variety of assembly procedures (left).

Furniture Maker's Sustainable Setting



An environmental prophet meets a company's egalitarian design culture.

Miller SQA
Holland, Michigan
William McDonough +
Partners, Architect
Verburg & Associates,
Architect of Record



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Landscape architect Pollack Design Associates has created a "living landscape" that evokes nature, but is specifically designed to counter the environmental consequences of the building. Swales, rather than retention ponds (site plan opposite and photos previous pages) help filter stormwater runoff. The central vault announces the building entrance (top and middle left, opposite middle). A meadow of mixed grasses, rather than conventional high-maintenance lawn, extends to the loading-dock (bottom). This is the latest signature building erected in Herman Miller's home region (map opposite).

Herman Miller Facilities

*Map opposite: **1.** Meridian **2.** Powder Coat Technology—Van Dyke +Verburg (1992) **3.** Integrated Metal Technologies **4.** Grandville Pavilion— Booth Hansen & Associates (1982); Donovan and Green (mid 80's) **5.** Millcare **6.** Corporate headquarters—George Nelson (1950's); A. Quincy Jones (1970), CRS (1979); Meyer, Scherer & Rockcastle (late 80's) **7.** Midwest Distribution Center—Bede Van Dyke and David Verburg (1989); Miller SQA **8.** Holland Chair Plant, CRS (1979) **9.** Design Yard—Meyer, Scherer & Rockcastle (1985) **10.** Marygold Lodge*

3y Robert Bruegmann

retching along a low ridge on a large landscaped site, the new Miller 5QA building looks at first glance like a discreet and tasteful suburban corporate headquarters. The loading docks at the rear of the building, however, reveal that this is not primarily an office building out a production facility housing 600 factory workers and 120 white-ollar employees.

Architect William McDonough, known as a prophet of sustainable lesign, and his team reconciled environmental concerns with the client's integrated vision of marketing, design, and production. The arge areas of glass throughout and the generous light-filled break ıreas consciously attempt to foster interaction between front office ınd factory floor and provide a high-quality interior environment 'or everyone. The naturalized prairie and woodland landscape outside 'urther evidences how the sustainable ideal was played out on this project.

To anyone who knows SQA's parent company, furniture-maker Herman Miller of Zeeland, Michigan, the attention to design lavished on a factory will not be surprising. Because Herman Miller sells lesign, the company has been unusually sensitive to the way its buildngs look and function. Over the last few decades it has commissioned buildings from many well-known architects, both for sites near its neadquarters in the three-city region of Holland, Grand Rapids, and Muskegon—the historic heart of contract-furniture manufacturing map right)—and for buildings further afield. Significant recent structures have been designed for the company by Frank Gehry, at Rocklin, California, outside Sacramento [RECORD, January, 1990, pages 108-115]; Scogin Elam & Bray, at Roswell, Georgia; and Nicholas Grimshaw at Chippenham and Bath, England.

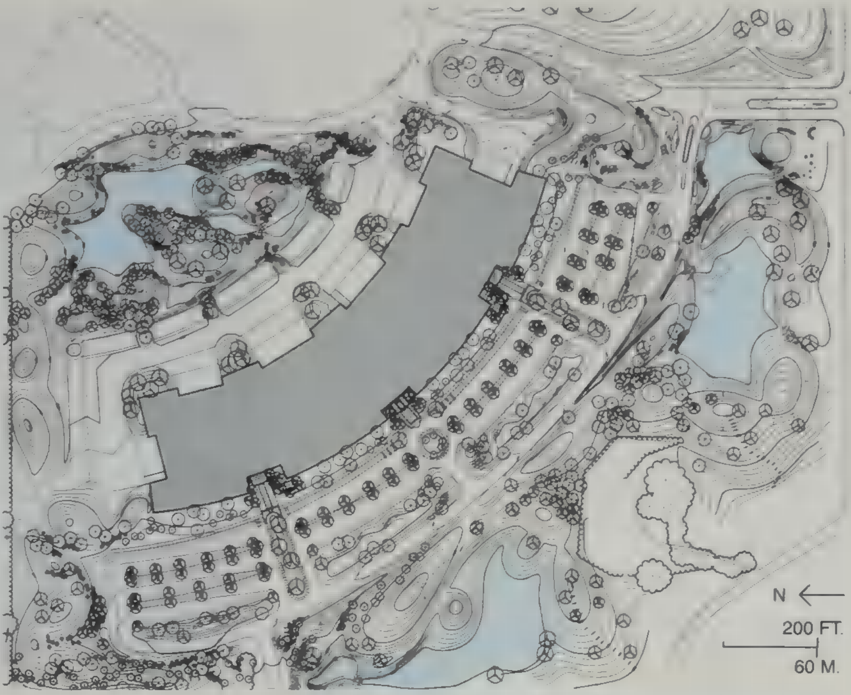
Herman Miller's corporate culture owes much to its western Michigan roots. The area was settled in the 19th century by Dutch Calvinists, a group that values an entrepreneurial outlook and strives 'or a consensus among equals. For Herman Miller this has meant a strong egalitarian impulse. In 1950, the company adopted the Scanlon plan, based on ideals developed by labor organizer Joe Scanlon, as a blueprint for expanding employee participation in decision making. For the past 15 years, for example, the salary of the Herman Miller CEO has been limited to a fixed multiple of the factory-worker salary.

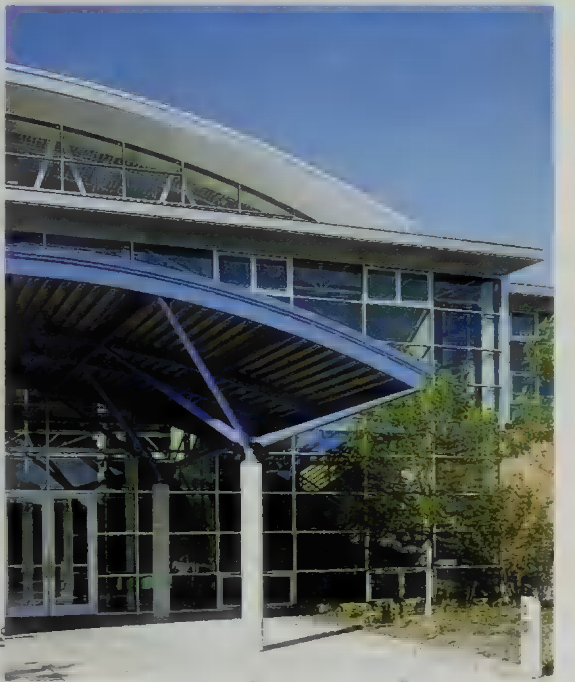
A corporate culture of recycling and sustainability

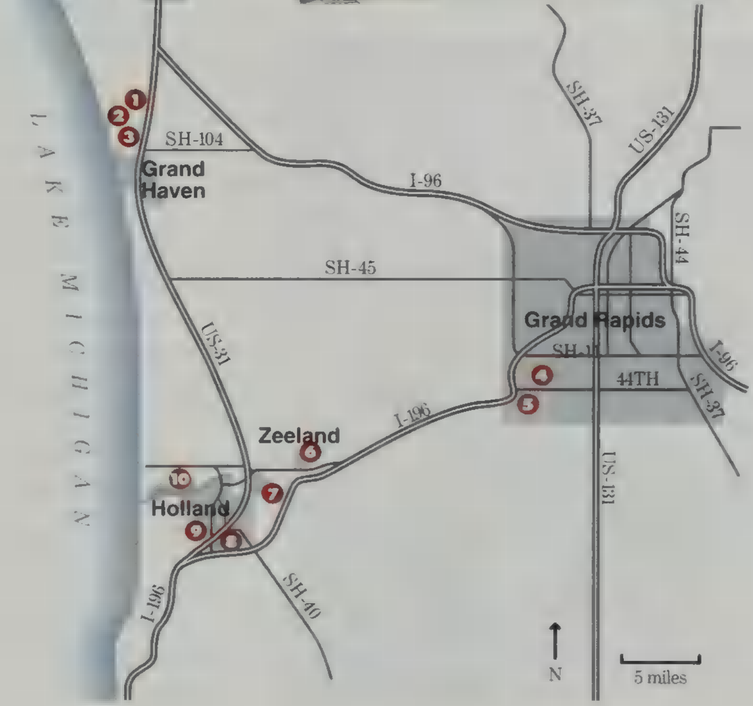
Proverbial Dutch thrift and dislike of waste had led the company to ake a major interest in conservation and recycling long before it was 'ashionable in most of corporate America. For example, Herman Miller stopped using rosewood, which had been a conspicuous feature of its famous Eames lounge chair, because harvesting the wood contributed to the depletion of tropical hardwood forests. SQA's parent company also has worked hard to reduce the amount of waste it sends o landfills and its use of toxic products in manufacturing.

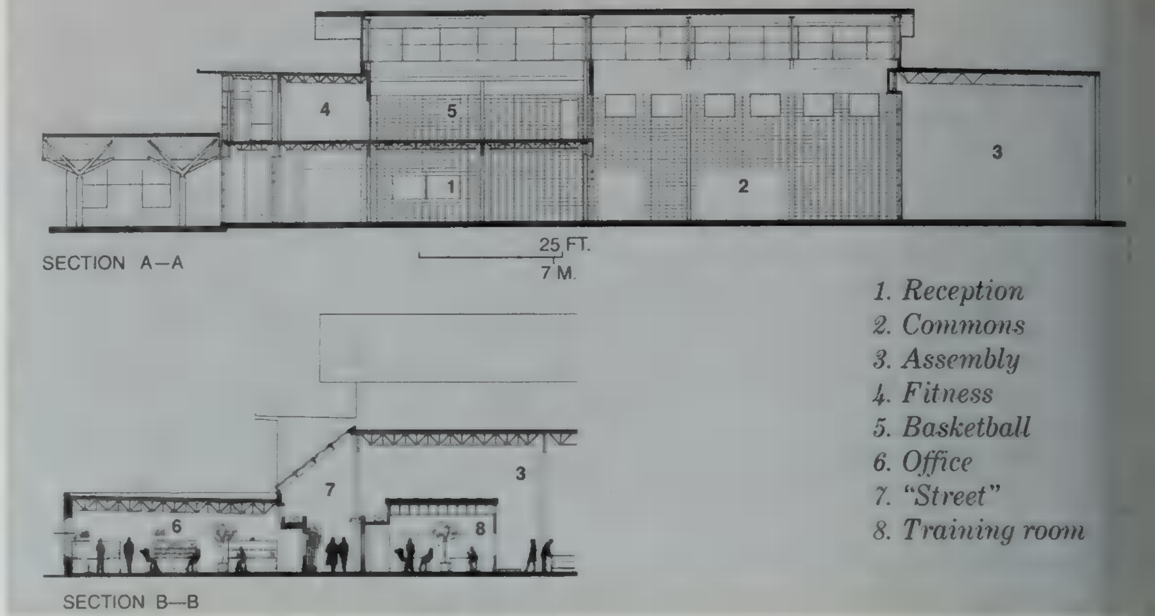
n fact, the principle motive in founding Miller SQA in 1984 was recycling. First called Tradex, and later renamed Phoenix Designs, hen Miller SQA, the subsidiary company was set up to address the problem of how to deal with used yet substantially built Herman Miller furniture when clients wanted new configurations, fabrics, or inishes. Company officials hit upon the idea of letting customers

Robert Bruegmann is professor of architectural history at the University of Illinois at Chicago. Author of numerous books, he has focused recent research on suburban corporate facilities.









1. *Reception*
2. *Commons*
3. *Assembly*
4. *Fitness*
5. *Basketball*
6. *Office*
7. *"Street"*
8. *Training room*

trade in their old furniture, then disassembling, reconditioning, reassembling, and reselling it.

In the last half dozen years, however, the business has shifted to include the manufacture of a limited line of new furniture as well. This line is attuned to a marketplace where re-engineering, downsizing, and the demand for quick turnaround are constant. Hence the current company name, SQA, for "Simple, Quick, and Affordable." Miller SQA represents a re-engineering of the company's own sales methods. Using high-powered laptop computers, Miller SQA sales people lay out furniture and punch up specifications in clients' offices. Interactive three-dimensional simulations show clients what the systems will look like. The computers also specify all of the needed parts, calculate the costs, and transmit the completed order back to SQA. This software, together with a network of reliable, dedicated local suppliers and an efficient nationwide distribution system, allows SQA to deliver orders in a matter of days rather than weeks, and minimizes warehouse-space needs.

A design process of consensus-building

The growth of this business made a new facility necessary. While "partnering" is now the rage in the building industry, Herman Miller has long involved key players at an early stage of the design process. Company employees formed the design-team nucleus for Miller SQA's new building. Then came contractor John Keelean of Owen-Ames-Kimball Construction Company, Grand Rapids, whose firm had developed a strong relationship with Herman Miller over several decades. Keelean, along with representatives of the principle subcontractors, helped refine construction costs, then built the structure under a negotiated contract. Finally, the company added several Michigan architects with long experience on Herman Miller buildings, including David VerBurg, president of Holland-based VerBurg and Associates. Miller SQA also retained interior designer Bede VanDyke (once a Herman Miller employee) of VanDyke & Associates, Holland, and landscape architect Peter Pollack, director of design at Ann Arbor-based Pollack Design Associates.

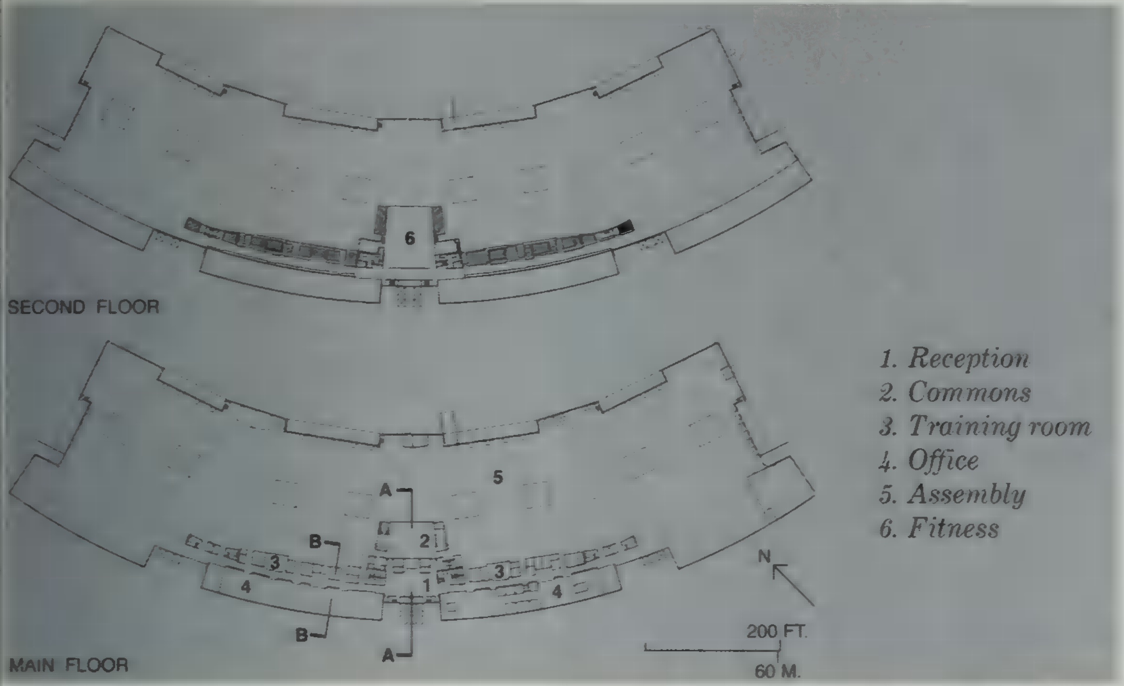
McDonough, head of Charlottesville, Virginia-based William McDonough + Partners, and dean of the University of Virginia School of Architecture, was the only team member who had not previously worked with Herman Miller, though he was known to company officials through their mutual involvement in environmental organizations. McDonough deeply believes in the redemptive power of design in a world headed for both spiritual and environmental chaos. It is easy to see that this approach might be too messianic for even the best-intentioned businesses.

But the fit, team-members say, was a good one. They found common ground in the depth of each other's beliefs, even when they weren't shared. McDonough believed that he could help move Herman Miller to the next level of sustainability, but he knew the company had to meet its bottom line. For example, McDonough, like other environmental activists, has urged the extension of a sustainability ethic beyond individual buildings to the urban scale, advocating the re-use of existing buildings in already built-up districts. Herman Miller has consistently steered away from big cities and downtown sites. The company's decision to build on a green-field site is not only consisten with its own history and individualistic, entrepreneurial culture, but emblematic of an emerging form of low-cost, very low-density development. Facilities for Herman Miller and its competitors are spread throughout its large home region, oriented to truck access from uncrowded highways rather than to towns. Western Michigan is a fast-growing rust-belt equivalent to the booming I-85 corridor between North Carolina's research triangle and Atlanta.

On site, however, the design-and-build team was receptive to McDonough's approach, and the team did a two-day charette early in the process to "show that we could do an ecologically intelligent building affordably," explains McDonough design partner Chris Hays. Thus, Pollack Design Associates' landscape scheme uses vegetation on the site to filter runoff from parking, and waste-recovery and recycling procedures were used both in construction and in the ongoing manufacturing processes. The research arm of McDonough's firm also consulted on the environmental impacts of specific building materials and practices, finding, for example, that a low-emissivity coated glazing was optimal compared to more elaborate shading strategies.

Design dissolves barriers between factory and office workers

The typical building section unites a low band of offices in front with high production block at the rear through a skylit main-corridor "street" (following pages). There are few walls or doors: the local code did not require a fire separation. The corridor fosters intermin-



1. *Reception*
2. *Commons*
3. *Training room*
4. *Office*
5. *Assembly*
6. *Fitness*

The vaulted roof at the center of the plan not only creates a focal point in Miller SQA's low, glassy bulk, it unites those areas the company sees as key to encouraging staff interaction and team-building. Truss-framed clerestories draw daylight into the dining commons (below) and basketball court (bottom). Likewise, the skylit circulation spine becomes the "street" that unites production and white-collar workers (plans left and sections opposite). It's oriented to catch winter light.

ing of factory and office workers not only through its attractive- ss, but because it houses photocopy and conference areas that eryone uses. In office areas, operable windows provide abundant esh air, daylight, and views. In the production areas, sunlight pours through skylights and windows, aided by borrowed light from the rridor (following pages). In these areas, fresh-air supply is about x times code requirements.

he centrally located cafeteria, fitness center, and informal break eas placed along the corridor also encourage interaction. Indeed, at iller SQA it is almost impossible for the visitor to distinguish tween casually dressed company officers and line workers.

n the outside of the building the designers attempted to synthesize number of "green" strategies. The entrance road winds through a ndscape of prairie grasses, wetlands, man-made swales, and clumps trees that shield the neighboring subdivision from building lights d the bustle of trucks and minimize landscape-maintenance costs. ear the building, the parking lots are punctuated with trees that will entually form a cooling canopy over the asphalt.

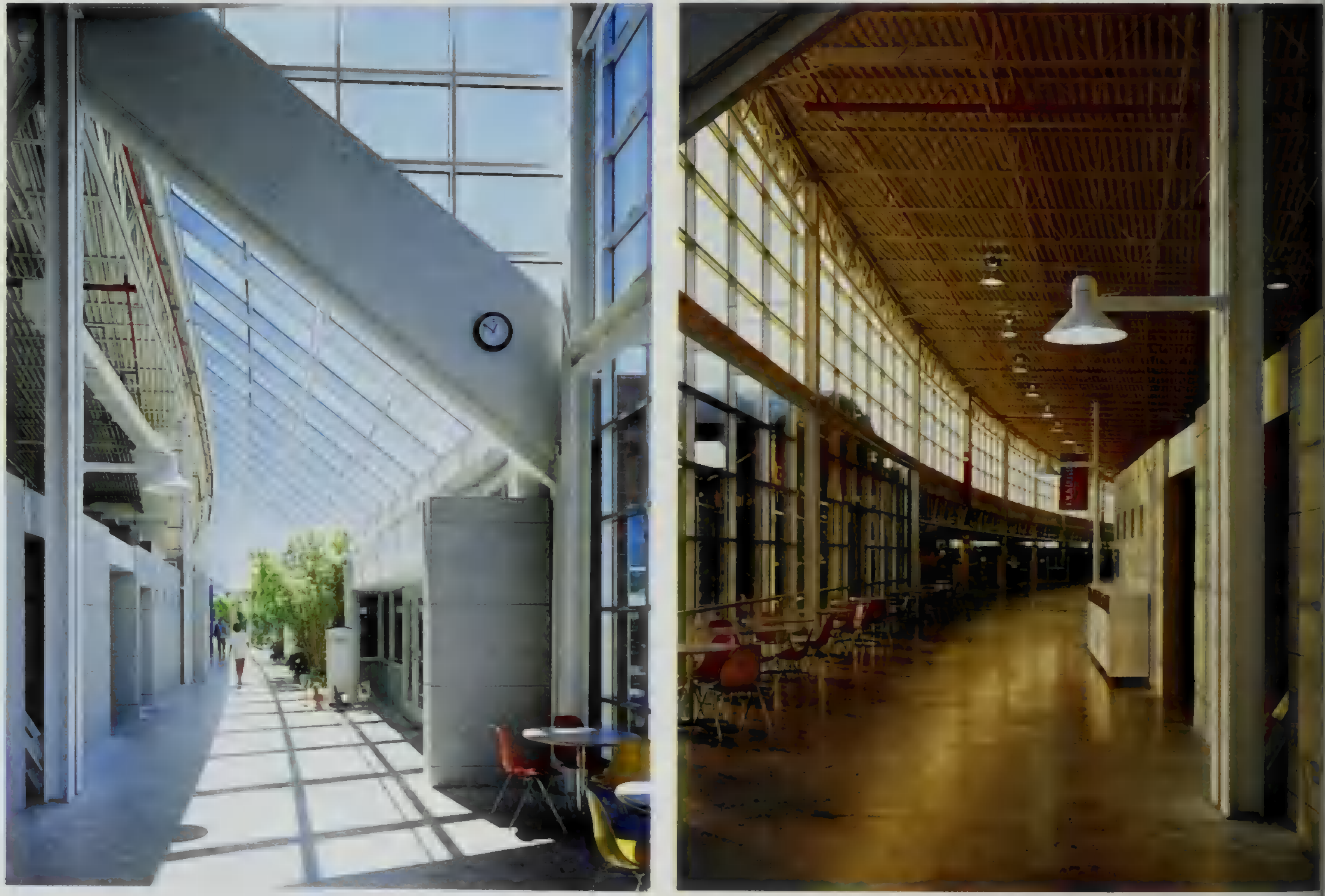
acility's environmental impact will undergo evaluation

lmost all of these design elements involved a cost premium. At pproximately $49 per sq ft, the building came in substantially higher an the average production facility in low-cost western Michigan, cording to a company spokesperson. Some of this premium will be couped in energy savings.

ore importantly, the daylighting and indoor-air-quality strategies sed at Miller SQA have drawn attention because of their potential oductivity advantages. Hard data, however, is largely unavailable, the U.S. Green Buildings Council, a private advocacy group, has rsuaded the U.S. Department of Energy to fund a study. It will mpare the new building with an addition to the previous facility, and onitor the incidence of sick days, manufacturing errors, and other pects of productivity. It is the most sophisticated such monitoring any American building to date, says James Weiss, a scientist with acific Northwest Laboratories, Richland, Wash., the organization at will analyze the collected data. Miller SQA is already convinced at retaining valued staff and increasing productivity will, over the ilding's life, dwarf added construction costs. ■

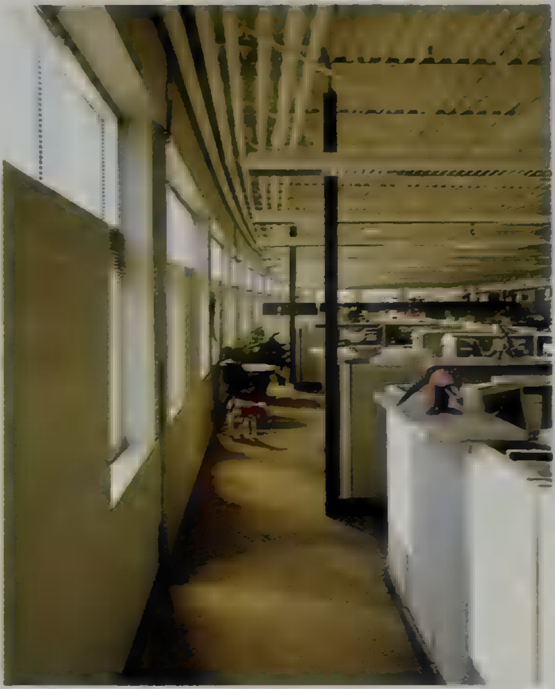
The attractiveness of the main corridor "street" (below) is key to Miller SQA's nonhierarchical, collaborative culture. Offices and production areas are visually linked (opposite top right). The minimally heated and ventilated corridor creates a buffer between the air-conditioned offices and production areas.

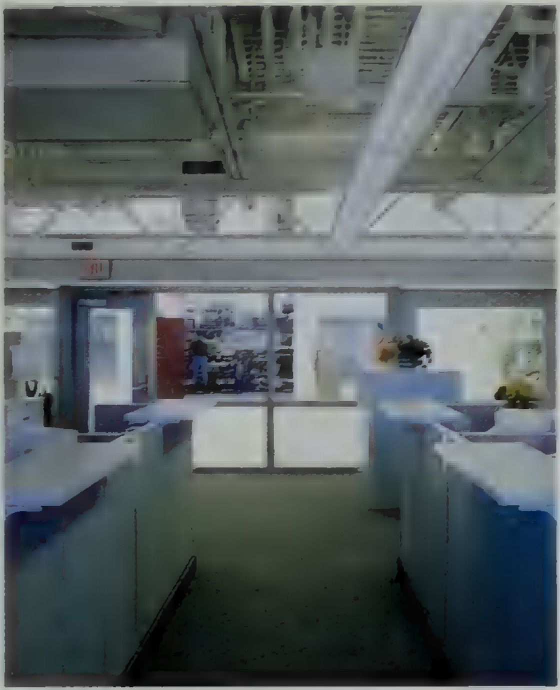
Credits
Miller SQA
Holland, Michigan
Owner: *Herman Miller—Mary Dugan, Ed Nagelkirk, Keith Winn (Herman Miller); Bix Norman, Del Ensing, Bob Enders, Fred Guss (Miller SQA)*
Architect: *William McDonough + Partners, Architects—William McDonough, partner-in-charge; Chris Hays, design partner; Kevin Burke, Roger Schickedantz, project architects; Celia Szabo-Imrey, job captain; Lisa Borgmeier, Alan Bruton, Allison Ewing, Elke Knoess, Nana Itoh, John Quale, design team*
Architect of Record: *VerBurg & Associates—David VerBurg, president; Craig Slager, James Davis, Michael J. Lubbers, team*
Engineers: *Thornton-Tomasetti Engineers, Soils and Structures (structural); Quality Air Heating and Cooling (mechanical); Parkway Electric Company (electrical); Shen Milsom & Wilkie (acoustics)*
Consultants: *Pollack Design Associates (landscape); Van Dyke & Associates (interiors); Environmental Research Group (daylighting/materials analysis); E Source (environmental); Kugler Tillotson Associates (lighting)*
General Contractor: *Owen-Ames-Kimball*

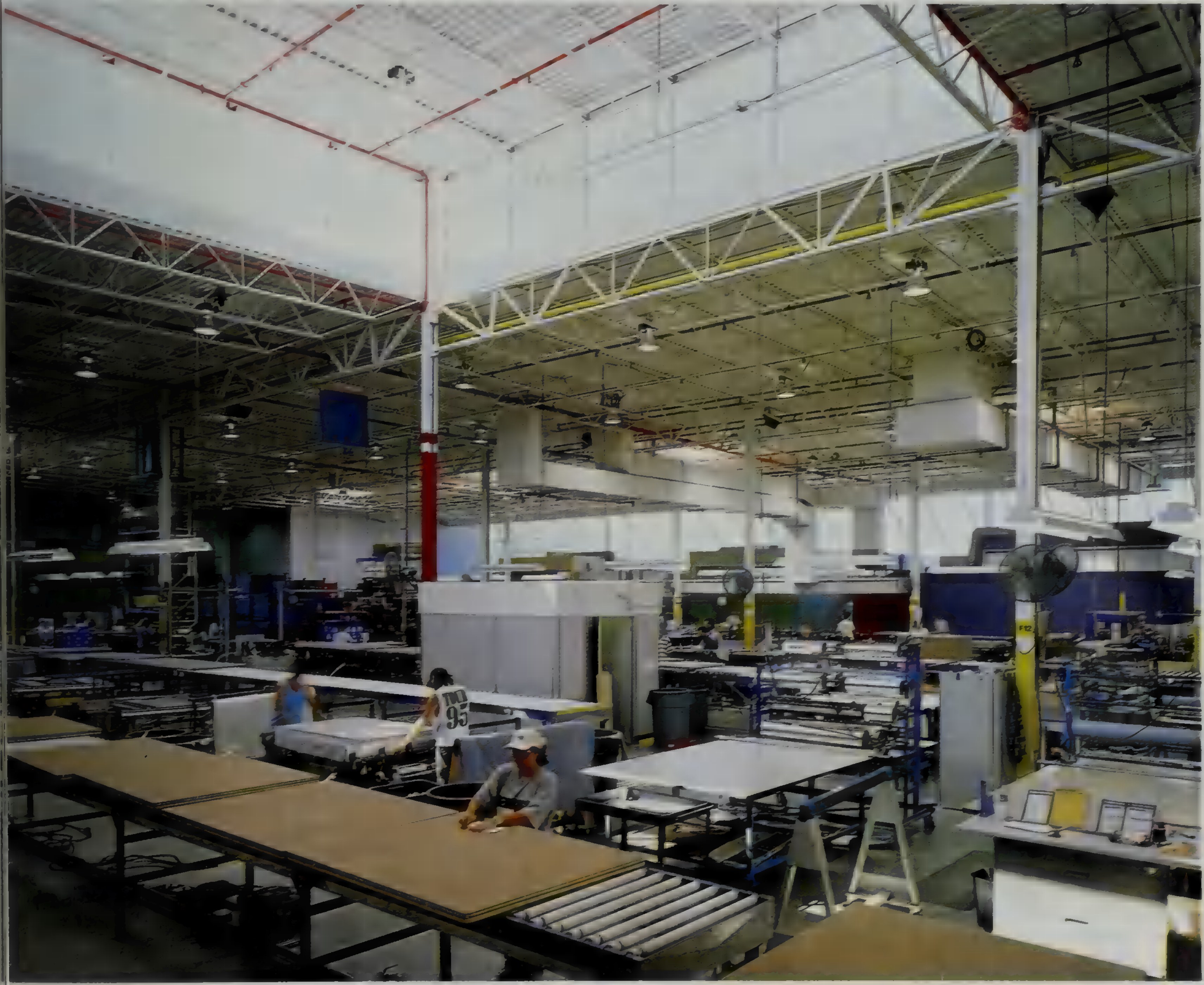


Above: Two views of the "street" that unites manufacturing (left in left photo, right in right photo) and office areas.

nergy conservation techniques
clude the use of high windows
offices that drive daylight
ep into the plan (near right).
nsors dim electric lights when
ylight is sufficient. The effect
ay be boosted if light shelves
e company is considering are
ounted below the high
indows. Lower windows are
erable. Using these techniques
iller SQA was able to reduce
fice air-conditioning loads.
adiant floor heating was
stalled near windows.
ylights, exterior windows
d borrowed light from the
treet" bring abundant sun into
oduction areas (bottom).







Clip-Ons Enhance A Factory

A Silicon Valley company upgrades from spec norms, gaining staff-attracting amenities and the flexibility to respond to high-speed technical change.

It's back to the future time in Silicon Valley," says Abe Darwish, vice president, world-wide real estate, at 3Com, a fast-growing company that creates tools for networking computers. Darwish is referring to the recently reincarnated notion of the fully integrated plant, in which raw goods go in one side and a finished product comes out the other. Henry Ford's heroic industrial compound, the River Rouge Plant outside Detroit, has been reborn within the confines of the tilt-up warehouses of the flood plains south of San Francisco. Companies are again looking to architects to make an equivalent to Albert Kahn's industrial monumentality. For 3Com, Studios Architecture has designed a playful, inexpensive, and scaled-down solution.

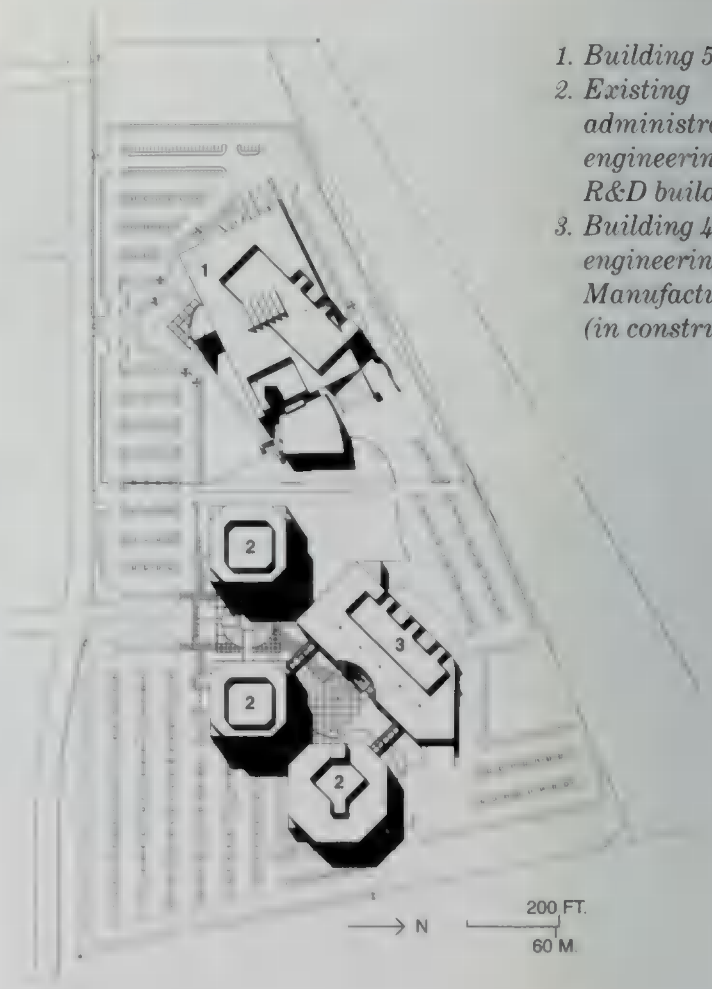
The buzz-words now making the rounds in Silicon Valley are "concurrent engineering" and "integrated manufacturing." The goal is to bring the people who develop, design, make, and sell products into proximity. Instead of a plant overseas and a headquarters building downtown, companies such as 3Com are putting everyone in one place. This trend has been a boon for architects such as Studios, who have tackled similar challenges for Northern Telecom (following story) and Silicon Graphics [RECORD, May 1996, pages 72-79].

The high-tech company required a facility that balanced flexibility, cost, and esthetics and gave 3Com "an edge as a company," explains Darwish. In the computer business, the rapid pace of technological change means companies may have to switch from office to manufacturing (and vice versa). And they need an "exit strategy"—i.e., the ability to readily lease space if downsizing looms. On the other hand, companies are upgrading from lookalike warehouses and spec office buildings to provide amenities that attract employees in Silicon Valley's highly competitive job market. At 3Com, the metal container for manufacturing bristles with a black-glass-sheathed health club and cafeteria, as well as conference rooms in bright colors.

For 3Com's Building 500, the strategy was self-evident, says project architect Erik Sueberkrop, a Studios principal: "The need for flow-through manufacturing makes the building very simple. We then cloaked and camouflaged the box with people-oriented elements that help break down the scale." Instead of burying the places where people gather inside the building or putting them into a separate building, Studios turned them into "clip-ons," such as the prominent blue staircases positioned to encourage chance encounters.

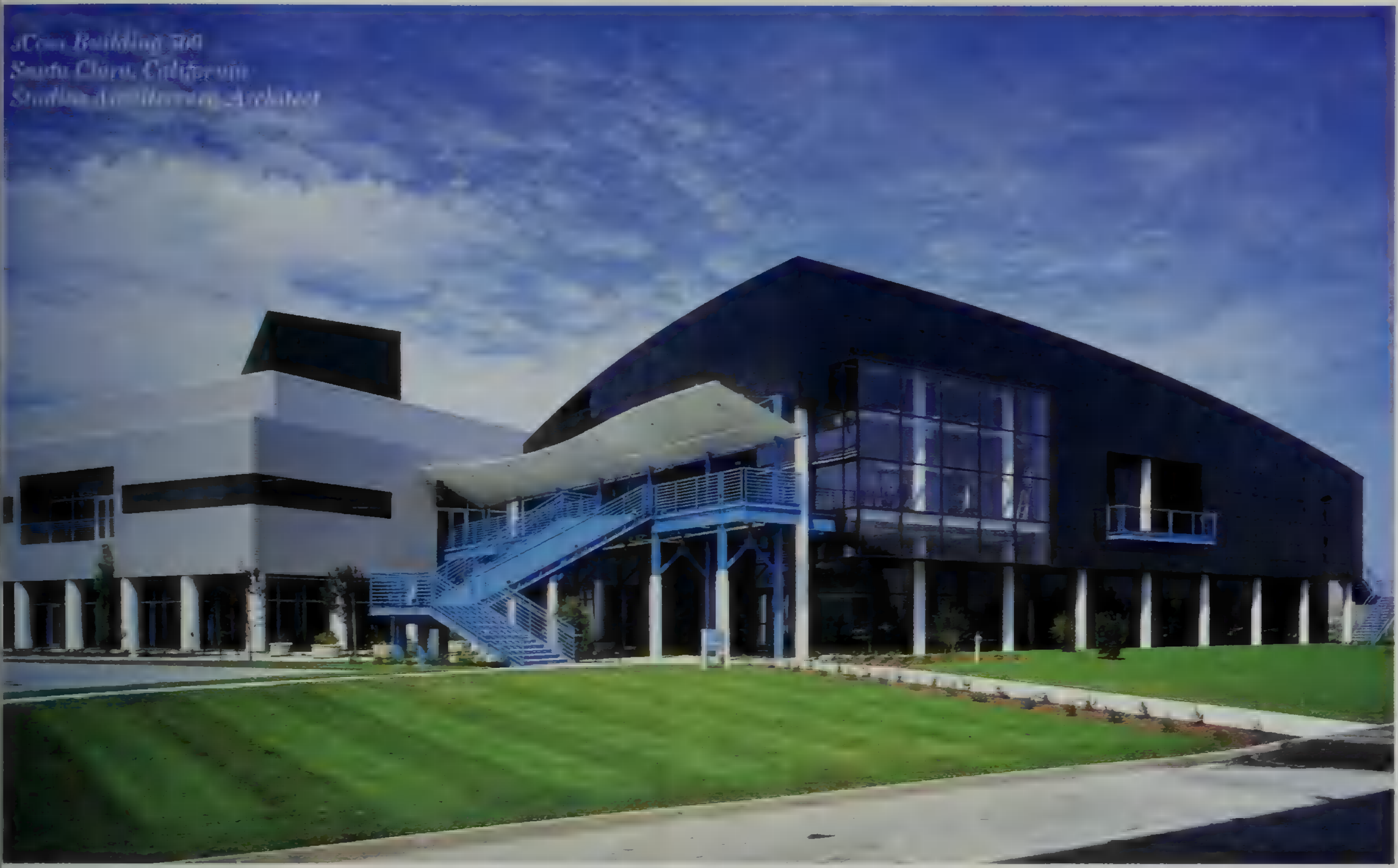
Not incidentally, these geometric fragments disguise the bulky 100,000-sq-ft floor plate (plans, following pages). Some of the materials call attention to uniquely public aspects of the building; others reference elements of the existing spec buildings on the campus. Building 500 is at once a billboard of the welcoming ambience the company creates for staff and the emblem of a scrappy competitor.
Aaron Betsky

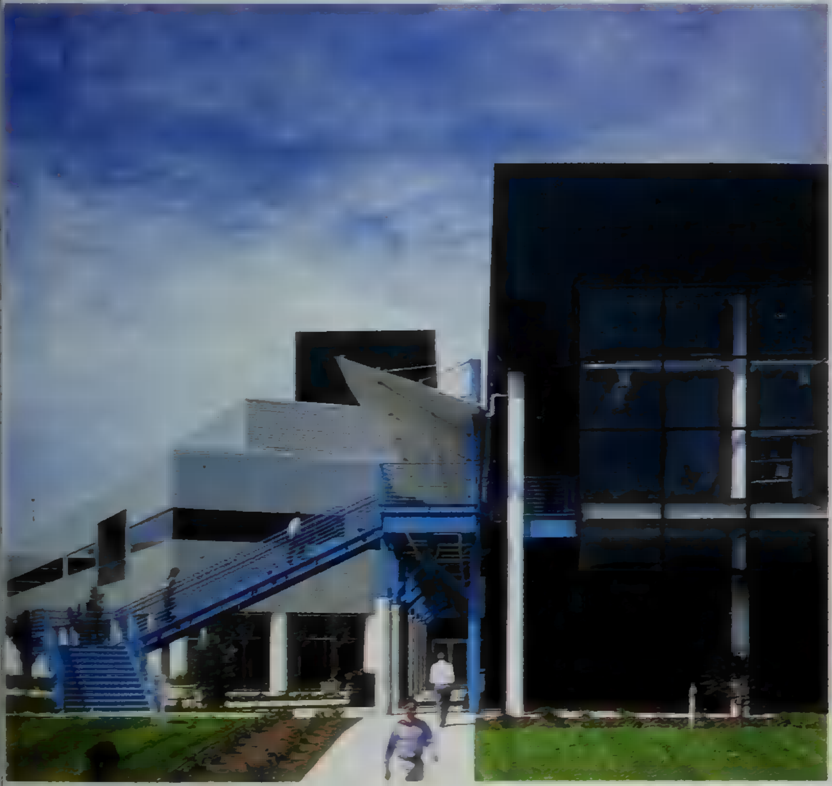
The main bulk of Building 500 is only visible from the adjacent freeway. It helps unify the collection of 3Com buildings, now nearing 1-million sq ft, into a gateway to Santa Clara.

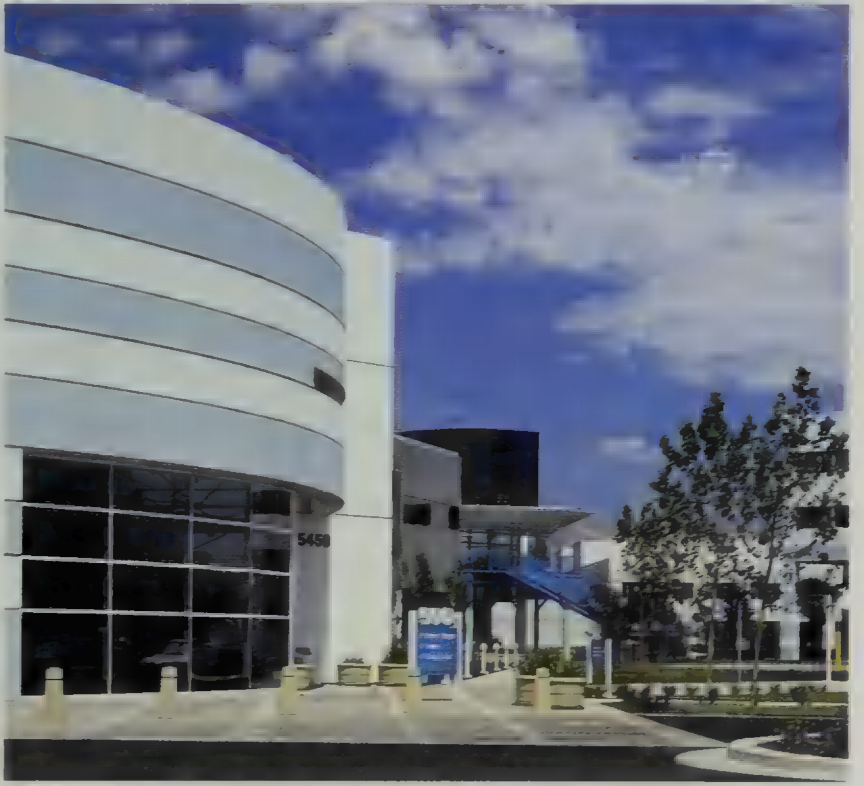


1. *Building 500*
2. *Existing administration, engineering, and R&D buildings*
3. *Building 400, engineering/R&D Manufacturing (in construction)*

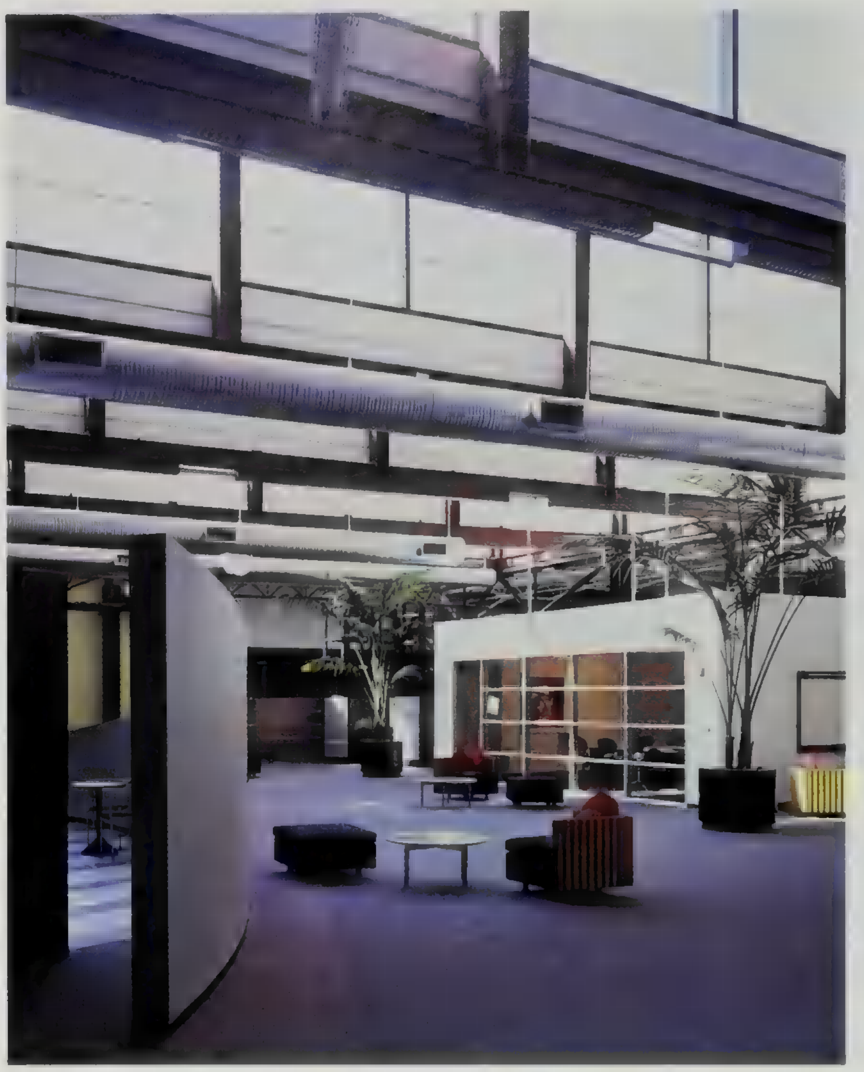
3Com Building 500
Santa Clara, California
Studios Architecture, Architect

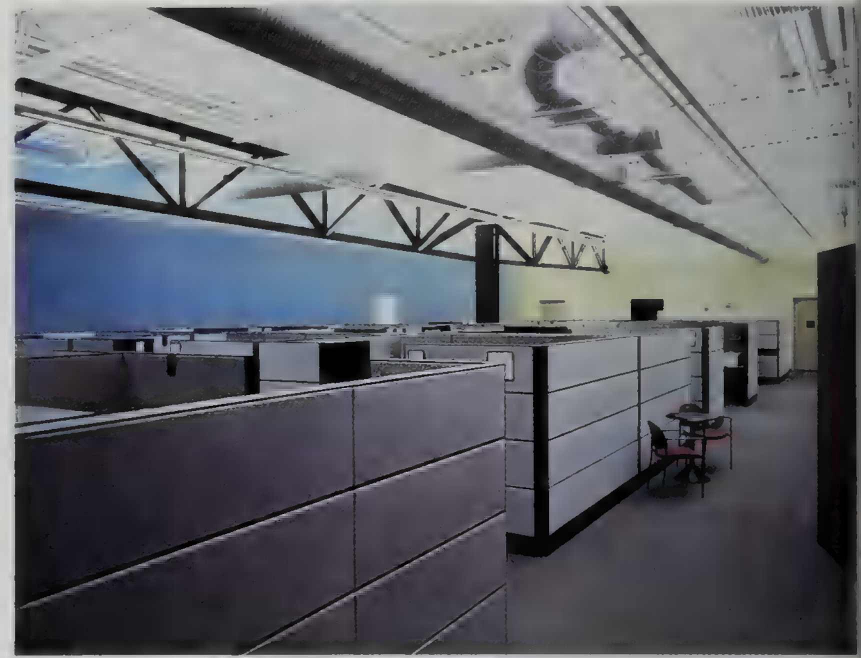




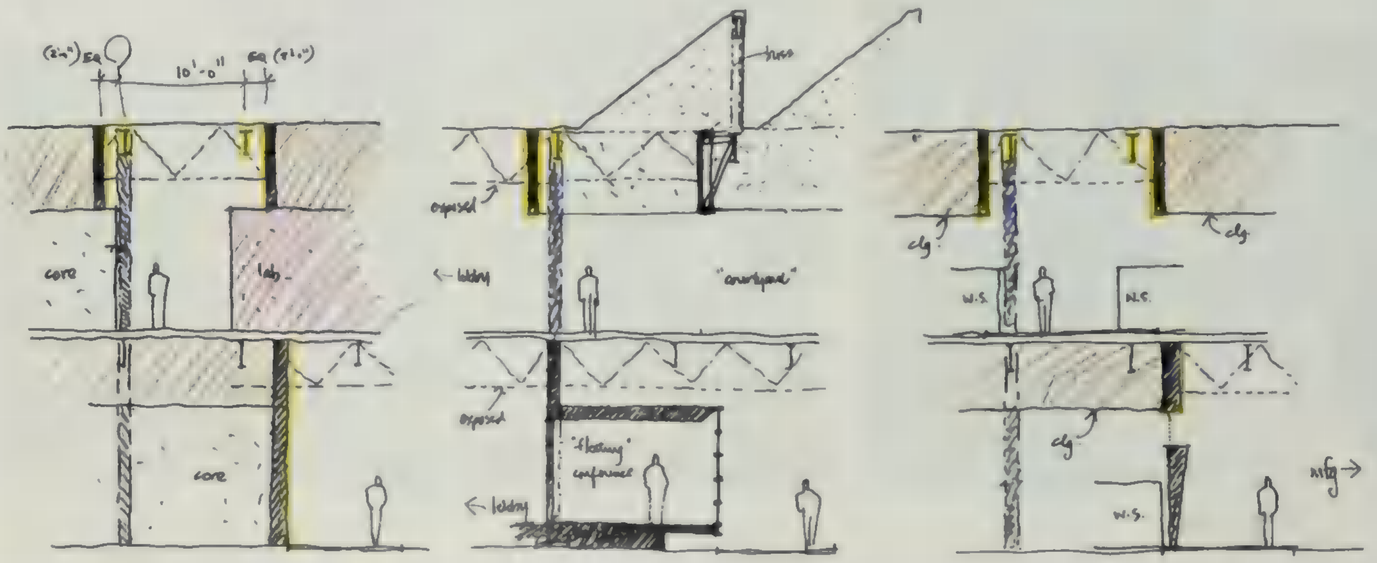


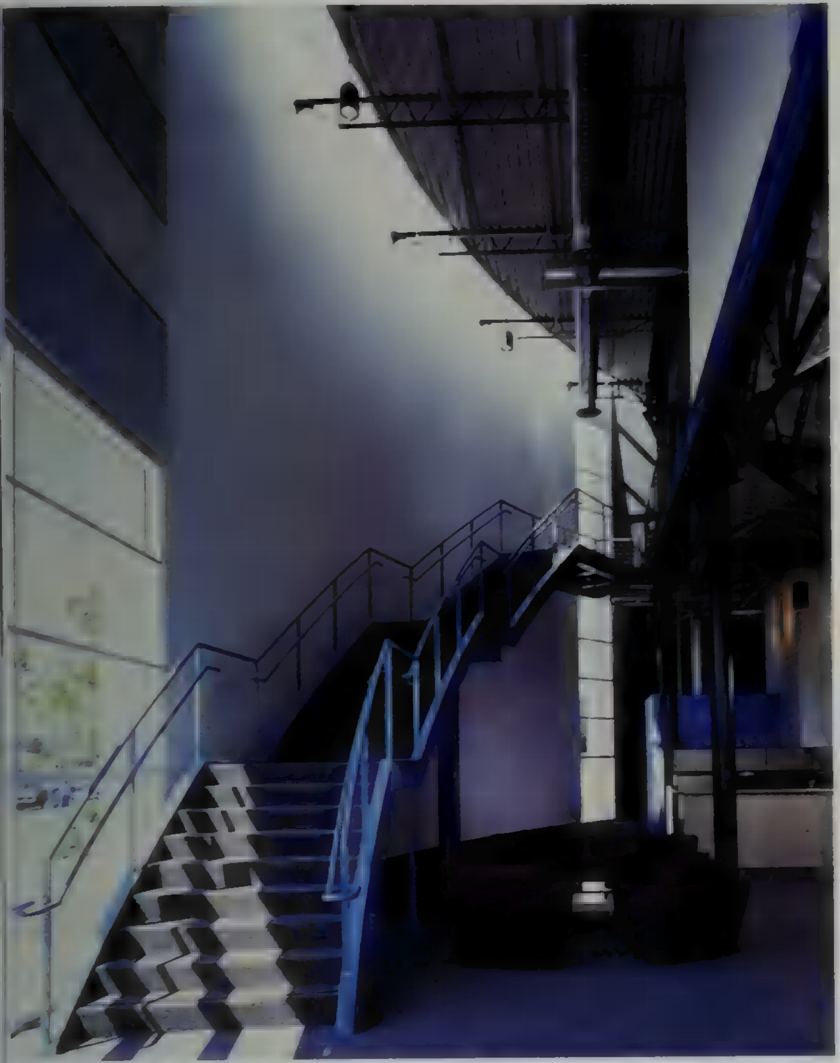
canopied entry and black-glass adding distinguish the fitness ıd training area from the rest 'the metal-sided building bove left and top). An entry in riped concrete (right) evokes ljacent buildings.

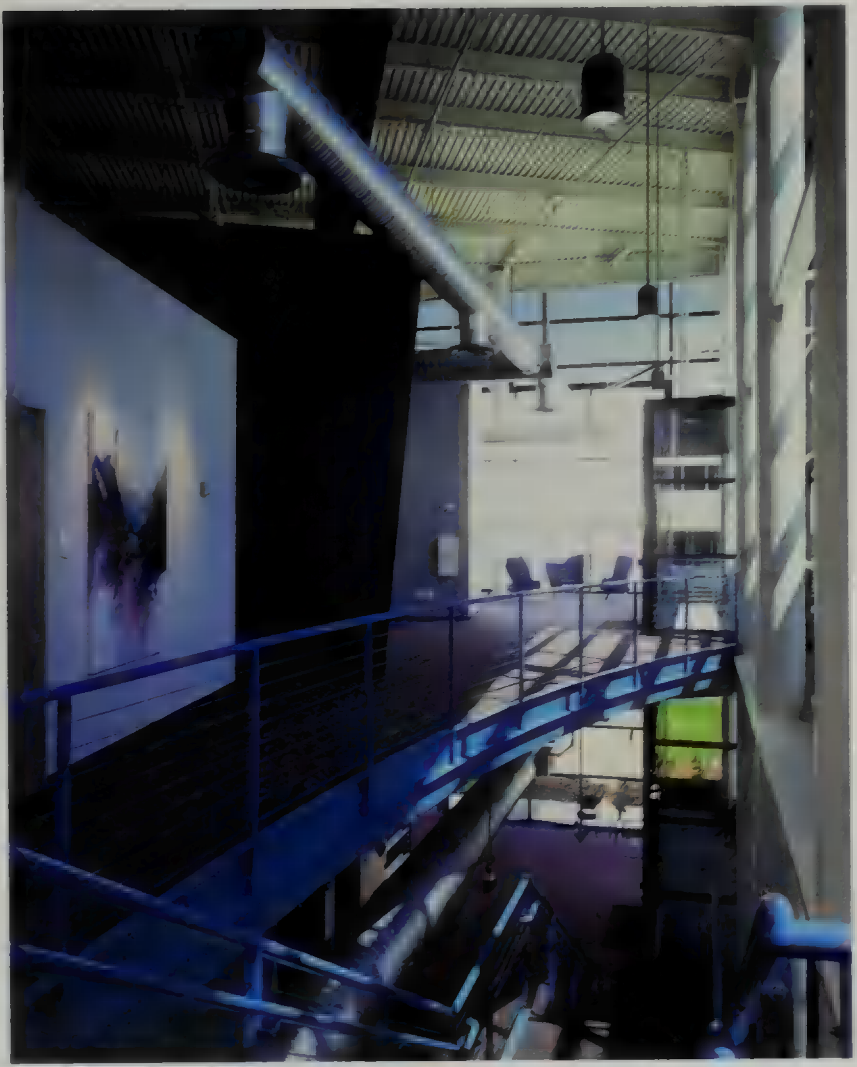




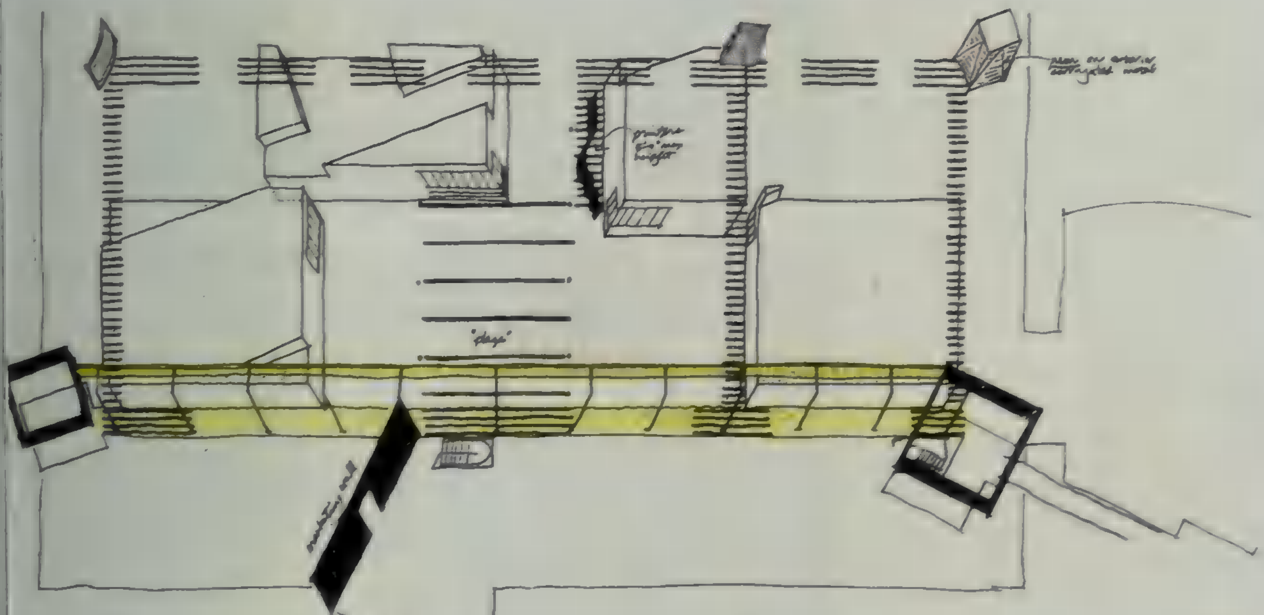
Building codes permit unprotected structure, so trusses and deck are exposed to keep costs down. The lighting, sprinklers, and ductwork are carefully, though not rigorously, fitted in (sketch below and photo above), esthetically uniting office and production areas. North-facing sawtooth skylights bring sun into an internal node of meeting spaces (left). "These are our new loft buildings," says Sueberkrop, referring to the structure's inherent programmatic flexibility—office floors can readily turn into assembly lines.

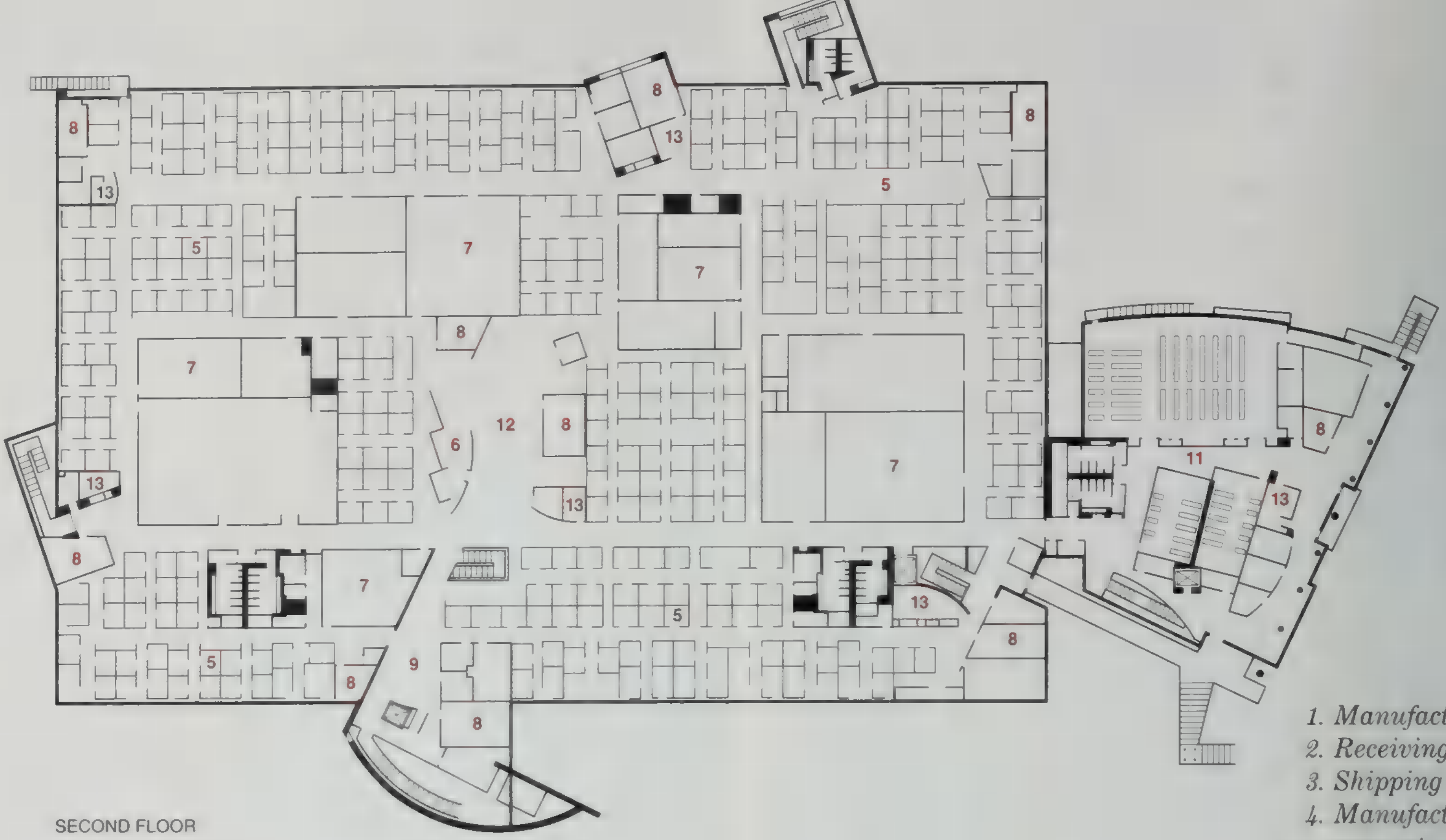






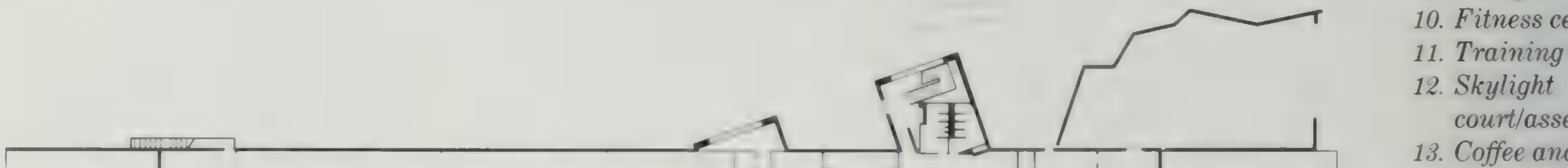
Open, daylit stairs and corridors (above) break down the departmental mentality that the client felt inhibited collaboration. The architect consciously sculpted these "leftover" spaces to draw staff into informal encounters. (Conveniently located coffee bars don't hurt either.) Since the space must be flexible enough to accommodate various office uses as well as manufacturing, these unique spaces are clipped to the extremities of the box-like volume.





SECOND FLOOR

1. *Manufacturing*
2. *Receiving*
3. *Shipping*
4. *Manufacturing support*
5. *Open office*
6. *Break area*
7. *R&D lab*
8. *Conference*
9. *Lobby/reception*
10. *Fitness center*
11. *Training center*
12. *Skylight court/assembly area*
13. *Coffee and copy area*



FIRST FLOOR

Companies like 3Com have increasingly turned to architecture as a means of reaching out to customers and potential employees. Only a few years ago, such companies regarded design as a costly frill. 3Com's training center (left) is a retail-like beacon to visitors. The media wall (middle) not only announces what the company is about, it connects the office areas to the manufacturing space at the rear. 3Com needed a fire separation at the manufacturing line, but the type of construction permitted allows glass areas between a conference room and production lines (bottom).

Credits
3Com Building 500
Santa Clara, California
Architect: *Studios Architecture—*
Erik Sueberkrop, principal-in-charge; Cliff Peterson, project architect; Todd Verwers, Jean Pascal Crouzet, Jason Lee, Peter Van Dine, Shirley Perez, Ian Fleetwood, project team
Engineer: *Structural Design Engineers (structural)*
Consultants: *Ken Kay Associates (landscape); Architecture & Light (lighting); Paoletti (acoustical)*
General Contractor:
Rudolph & Sletten

Boxes With a Twist

A curving spine unites engineering and manufacturing, enlivening three bleak tilt-up warehouses.

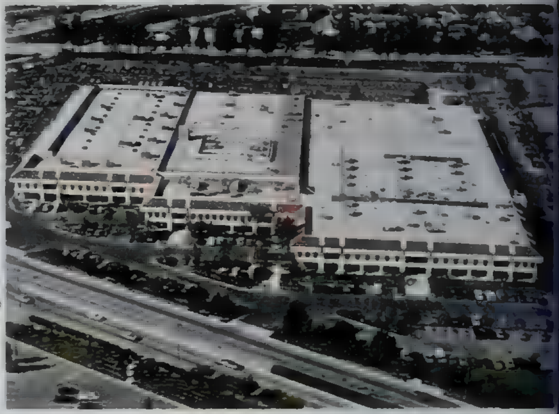
They are the ubiquitous bane of Silicon Valley and many other light industrial parks: one-story rectangles with no scale, no presence on the landscape, and no grace. Their tilt-up concrete or "Butler" building facades give no hint of what goes on inside. Luckily, the very blandness of such constructions offers great opportunities for rebirth at the hands of innovative architects.

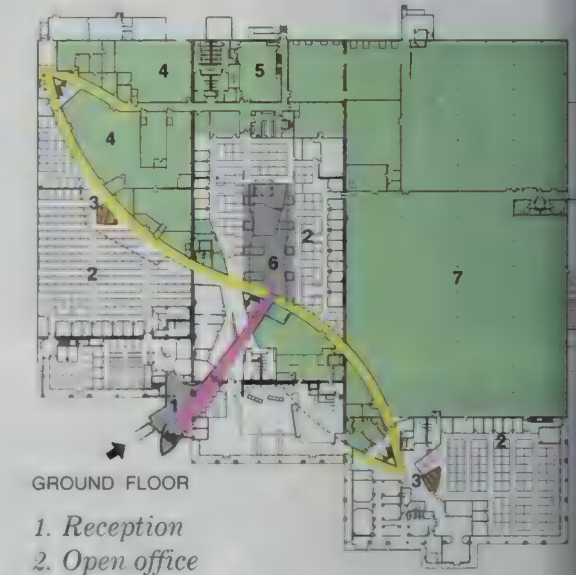
Northern Telecom, the Canadian-based telecommunications company, wanted to transform its 300,000-sq-ft, tilt-up behemoth in Santa Clara in order to unite the long-separated engineering and manufacturing segments of its corporate family. The company hired Studios Architecture, a firm that has specialized in bringing life, light, and identity to Silicon Valley buildings. The result is a set of boxes with a twist: a bland container that contains the sinuous geometry of a new internal organization, only a hint of which breaks out into the prevailing landscape of sprawl.

Northern Telecom's original building was constructed in three phases, starting in 1969. The architect was challenged to integrate these disparate building elements and to find an extra 50,000 sq ft of space for new offices. Studios created the new office space by building a mezzanine into an existing manufacturing volume, and brought light into the offices by way of a new central atrium, also carved from the original building. The architect unified the new expanse of open-office cubicles on both floors with a curving yellow wall (following pages) that helps employees orient themselves in the labyrinth. "Just stick to the wall, and you'll eventually find everything you need, from bathrooms to labs," says Studios principal Charles Dilworth.

The yellow wall also provides a sense of whimsy in what is otherwise a relatively undifferentiated interior landscape. Though its shape is expressive, it has a practical derivation. "We had to thread the needle between a whole series of encumbrances of the kind you have even in such a flexible building, including telephone rooms and shear walls," explains Studios principal Erik Sueberkrop.

There is only one grand moment in this whole building, and that is the atrium. Rather than remaining an empty space, this large room is arranged to allow multiple meetings to take place at the same time. Curving wood walls, exposed structure, and the yellow wall turn the space into an interior version of an urban square, where the true work of the community gets done around cafe tables. Cutting out from this core is the one straight axis, a diagonal that leads to a modest new entrance pavilion. At this location, the new architecture—and culture of Northern Telecom—peeks through the bland exterior of the tilt-up box (opposite), signaling that something unusual is going on inside. Like the promise of a new world of technology, the architecture of Northern Telecom breaks through the old, turning yesterday's mistakes into an opportunity for reconstruction. *Aaron Betsky*

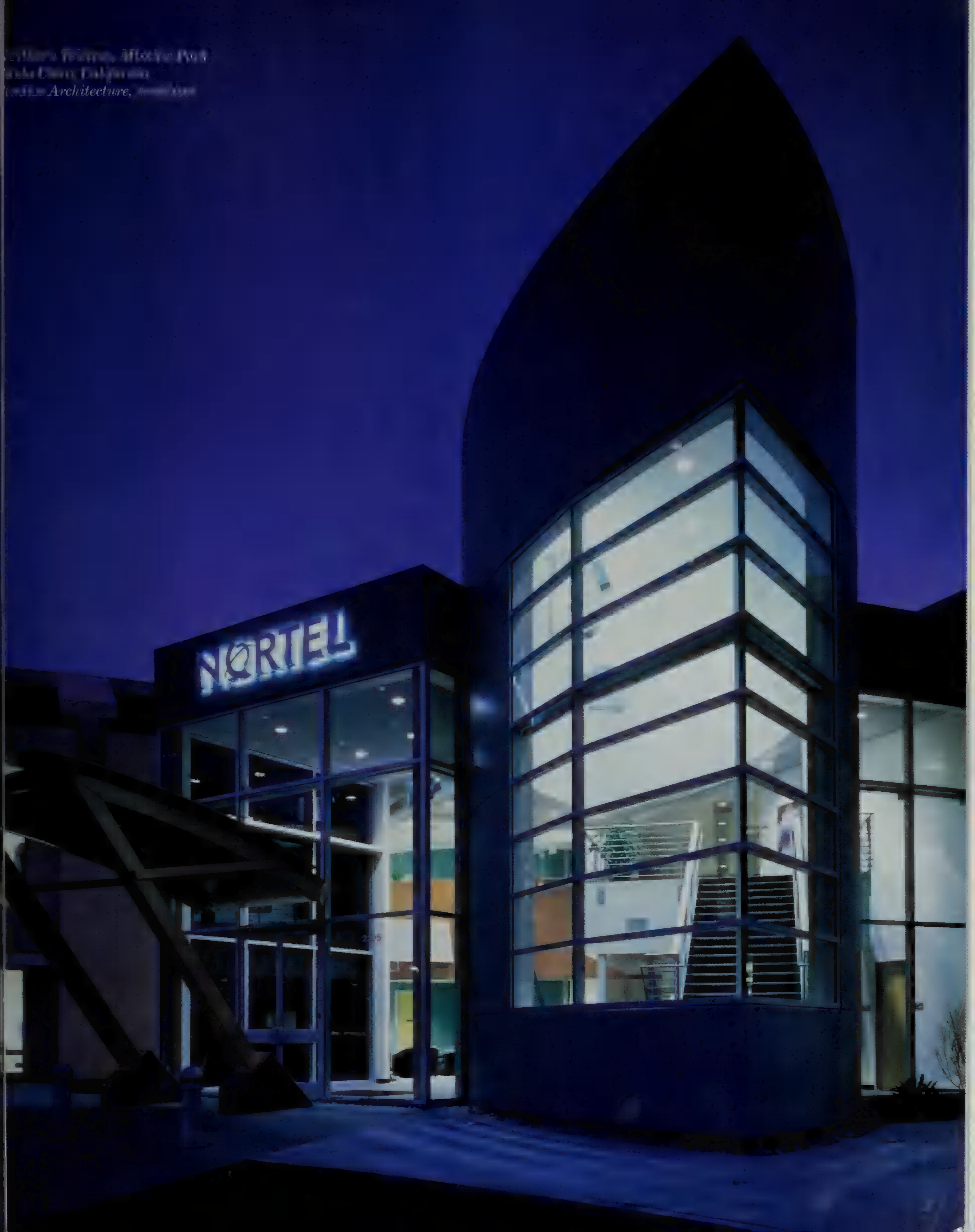

© Courtesy Northern Telecom



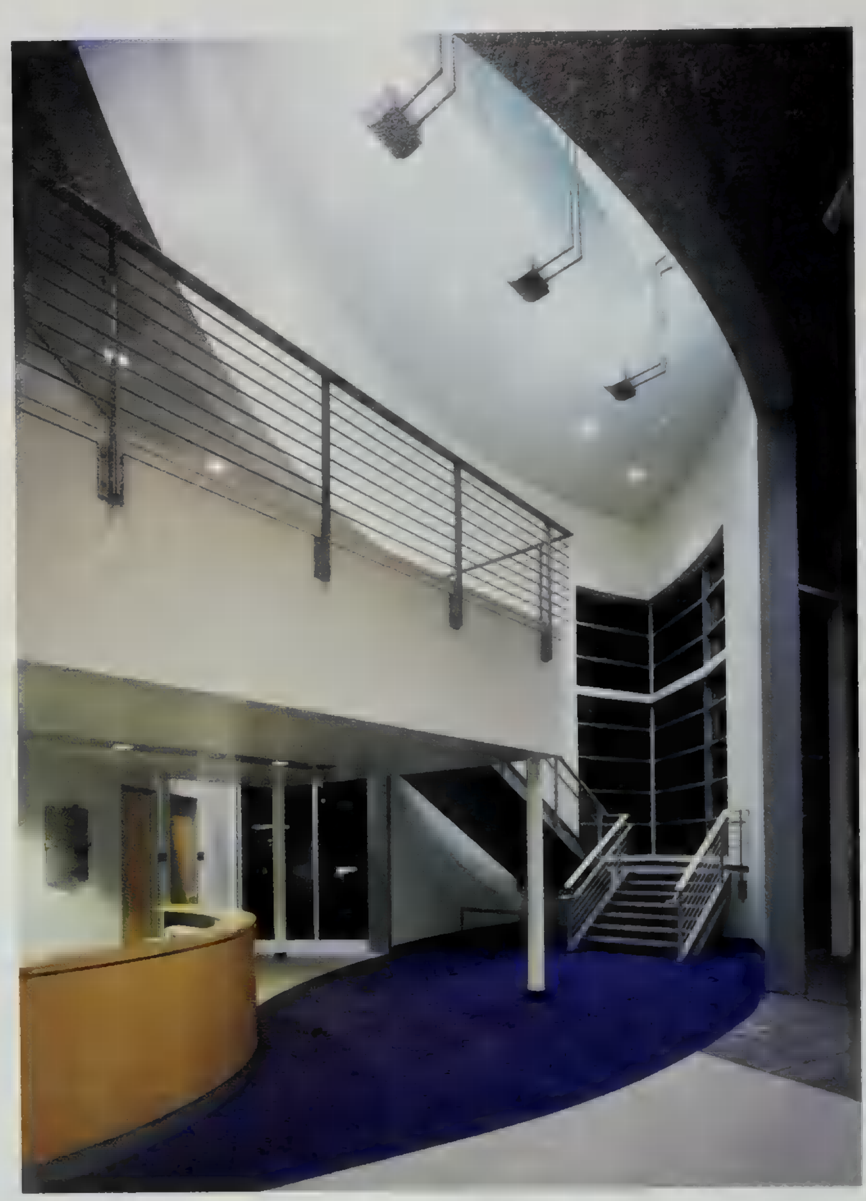
GROUND FLOOR

1. *Reception*
2. *Open office*
3. *Coffee/copy*
4. *Lab*
5. *Gym*
6. *Atrium*
7. *Manufacturing*

An ungainly assemblage of three tilt-up buildings (top) gets a new face and a new spine to accommodate a sleeker image and greater amenity for a high-tech company. The "double helix" circulation system (plan) implies a "boat" or "fish" shape, which is expressed on the front of the building as a reception tower, identifying Nortel from the nearby highway (opposite).



rthern Telecom, Mission Park
anta Clara, California
ective *Architecture*, Architect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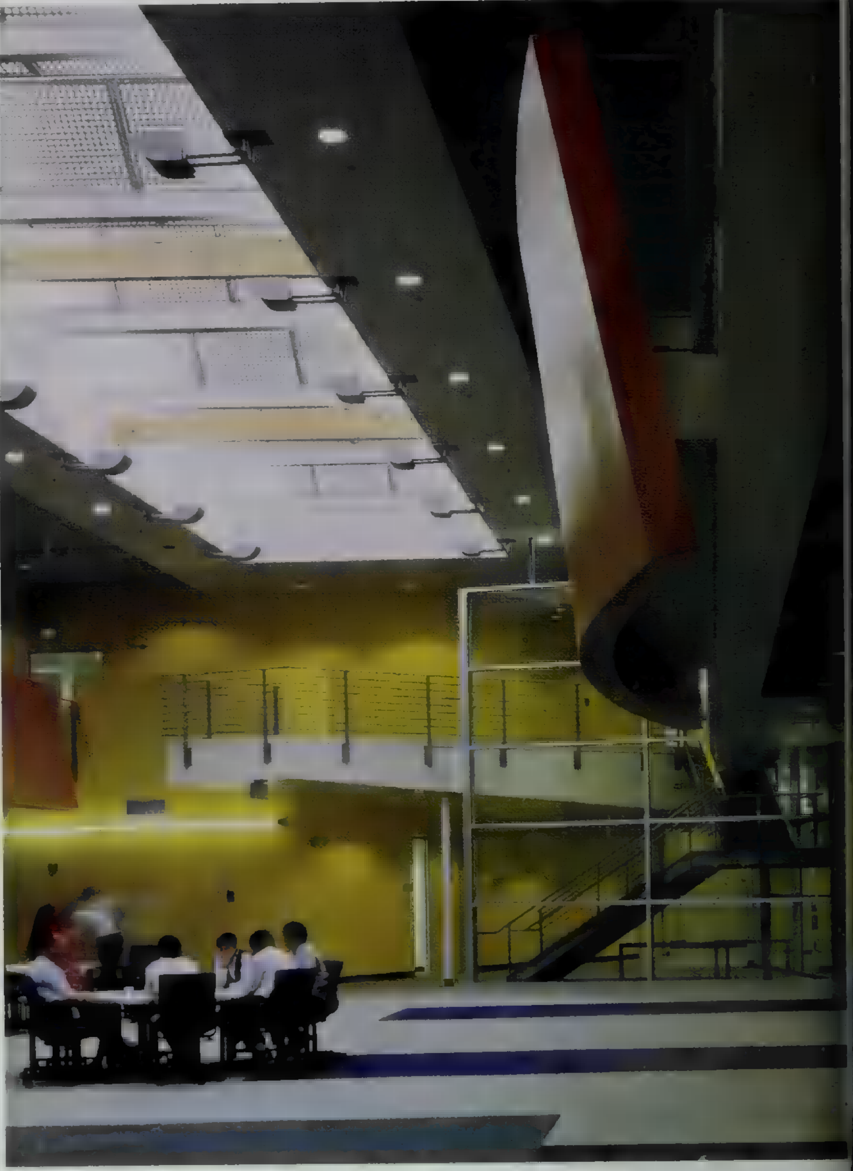
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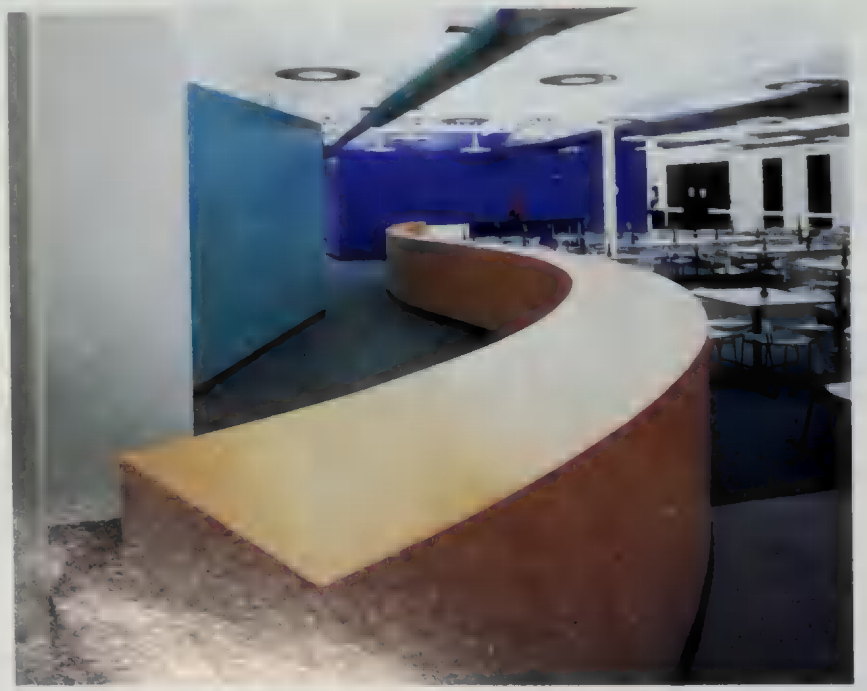
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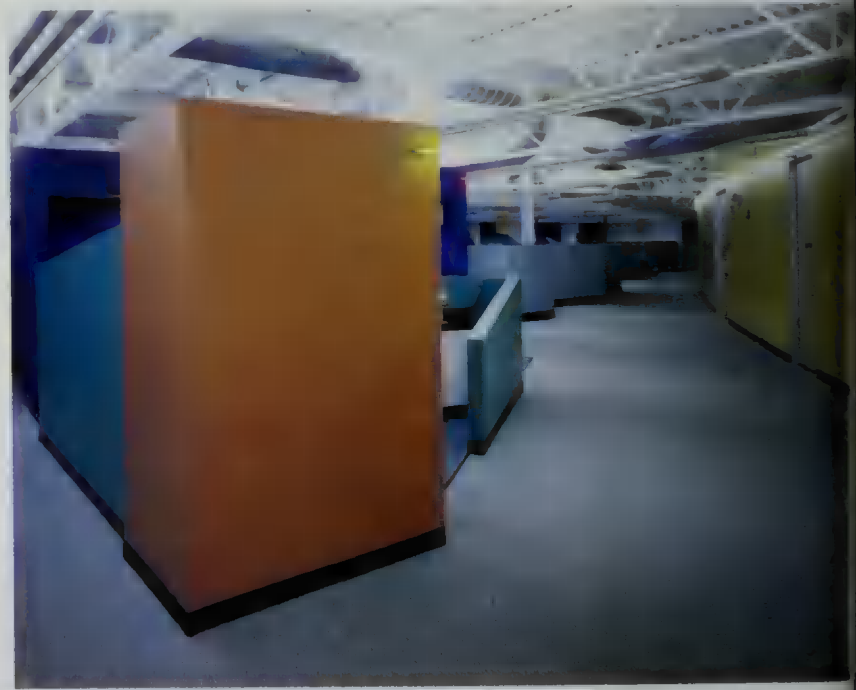

4

Studios [illegible] a central gathering space [illegible] from the heart of the old plant and found beauty even in the structure's simple metal trusses. A new entrance stair (1), the spine (4), and a cafeteria line (3) assist wayfinding.

Credits
Northern Telecom, Mission Park
Santa Clara, California

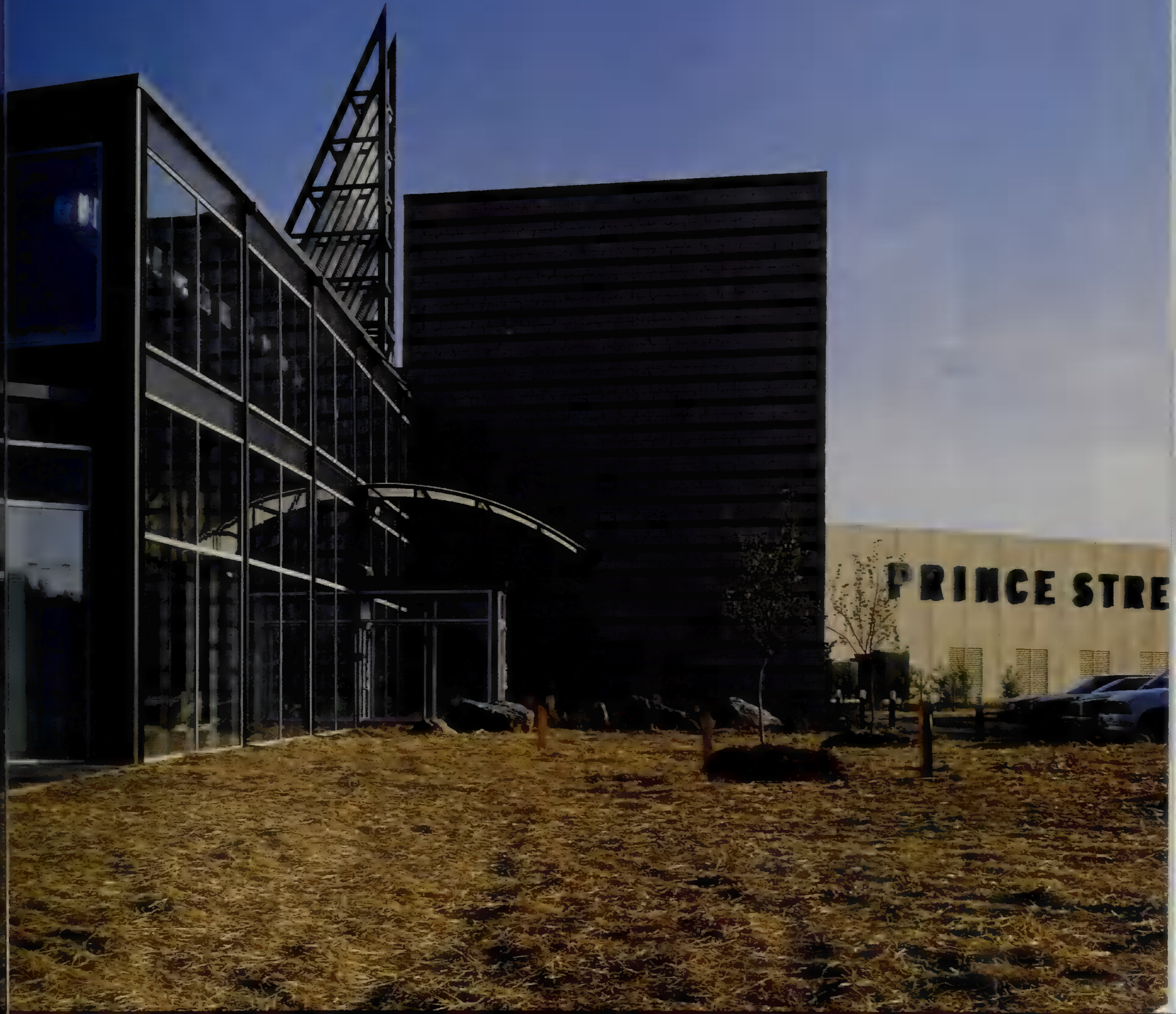
Architect: *Studios Architecture—Erik Sueberkrop, Charles Dilworth, Alan Tom, Kelly Haegglund, Tom Pinkowski, Colin Walker, Lori Clumb, Helen Kim, Jacek Ostoya, project team*

Engineers: *C. H. Wells & Associates (structural); Alfa Tech Bouillion, Air Systems (mechanical, electrical, plumbing)*
Contractor: *E. A. Hathaway*

Carpeting Over Old Hierarchies

A carpet company's integrated design, showroom, and production line tell its "quality story."

Prince Street
Cartersville, Georgia
Thompson, Ventulett, Stainback & Associates, Architects



For Prince Street, a custom-carpet manufacturer, all roads lead to Cartersville, Ga. Formerly housed in three locations in an Atlanta industrial park, this division of Interface Americas corporation needed a facility that mirrored its commitment to change. A new headquarters set in a 23-acre naturalized field beside Georgia Route 61/113 embodies the company's high-minded corporate thinking.

"People make the carpet," says company president Joyce LaValle, when describing the egalitarian environment she oversees. Placing design, showroom, manufacturing, and administration together in the 210,000-sq-ft facility reflects the company's ardent commitment to its employees. How? Apparent hierarchy has been banished from the premises: management and plant workers enter through the showroom, share the same amenities (from conference spaces to toilets), and park in the same lot.

There is a transparency to the plan that encourages employee interaction. Managers and workers wave in passing through a large glazed wall separating offices and mill space. Employees meet informally in a comfortably furnished public reception space that encourages conversation. Sunlight from skylights and an 80-ft-long window wall floods the manufacturing floor—a stark departure from the industrial norm.

This new kind of work setting meant a cultural shift, says LaValle: "It required total buy-in." Some employees were skeptical of management's intentions at first, an attitude that "big sister" was looking over the workforce. Skip Finch, the company's vice president for human resources, underscores how things changed. "It was like a fishbowl. Suddenly, workers could be seen. There was a new sense of honesty and it caused growth . . . more of a partnership attuned to working conditions."

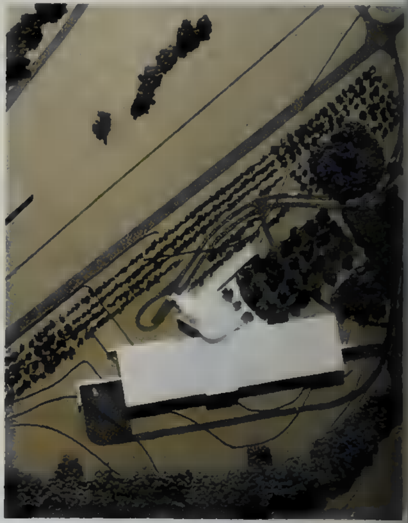
A funded competition, unusual in the manufacturing world, determined the architect. When Atlanta's Thompson, Ventulett, Stainback & Associates was chosen out of a field of four competitors in October 1994, the architect had little time for contemplation. A year later, Prince Street opened, having met its $5.6-million budget. "There was no premium for doing the right thing," says LaValle.

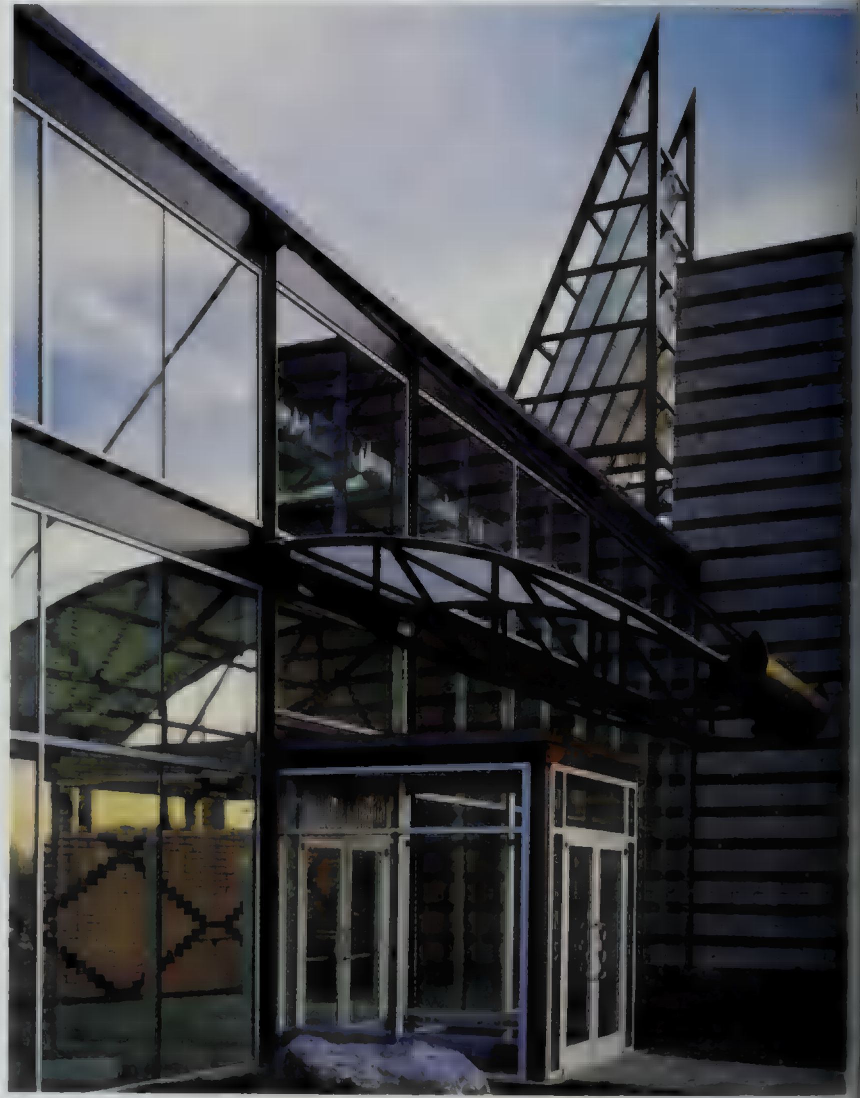
Bill Halter, the project architect, helped devise a plan with a circular design studio as the "non-rational, dynamic center." The location of the design studio on a mezzanine directly above a 120-ft-diameter custom sample lab permits easy interaction between designers and technicians, and reinforces their team relationship. A showroom that curves around the lab doubles as a gallery. Manufacturing, an "ordered, systematic, linear" process, occupies 170,000 adjacent sq ft.

Building health and sustainability concerns permeate the design. The company regarded the new facility as an indoor-air-quality lab. Materials were tested for offgassing of volatile organic compounds (VOCs), and anti-microbial agents were added to paints, carpets, floor sealers, fabric wall coverings, ventilation-duct liners, and condenser coils. The sustainability regime includes the natural landscape and the manufacturing area, where skylights and special diffusers reduce electrical loads. Windows are protected by sunshades (opposite).

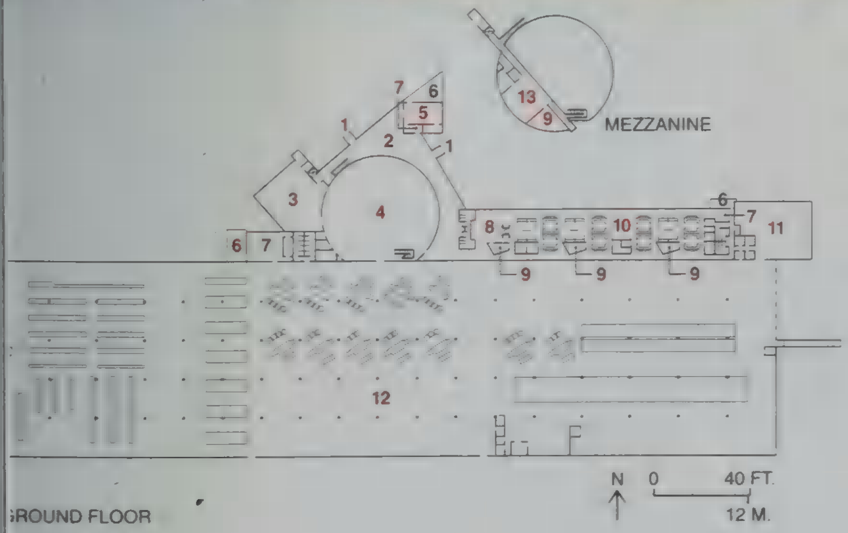
It is too soon to fully quantify the advantages of the design, but the president asserts that the building "has had an impact on our quality story." According to LaValle, the company has met its financial goals, and claims for workman's compensation are down. Plus, the building is attracting attention. "Other corporations are looking at the way we work," says LaValle. *Robert Ivy*

Site design (right) is based on a "zero-negative-impact" concept. Drainage from the roof and parking areas is directed through the landscape and into dry ponds, which allow the water to cool before it enters the natural waterways nearby. Low-maintenance plantings include switch grass and a custom wildflower mix.



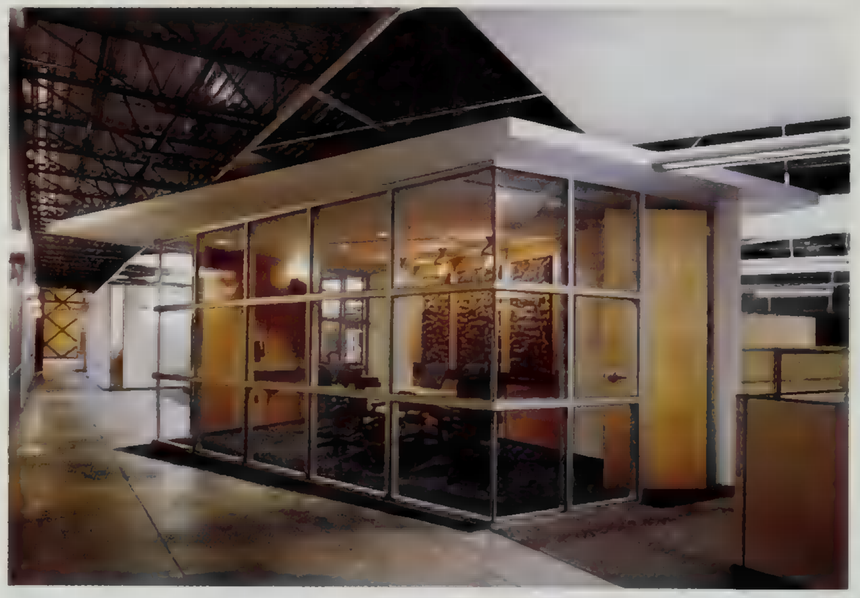


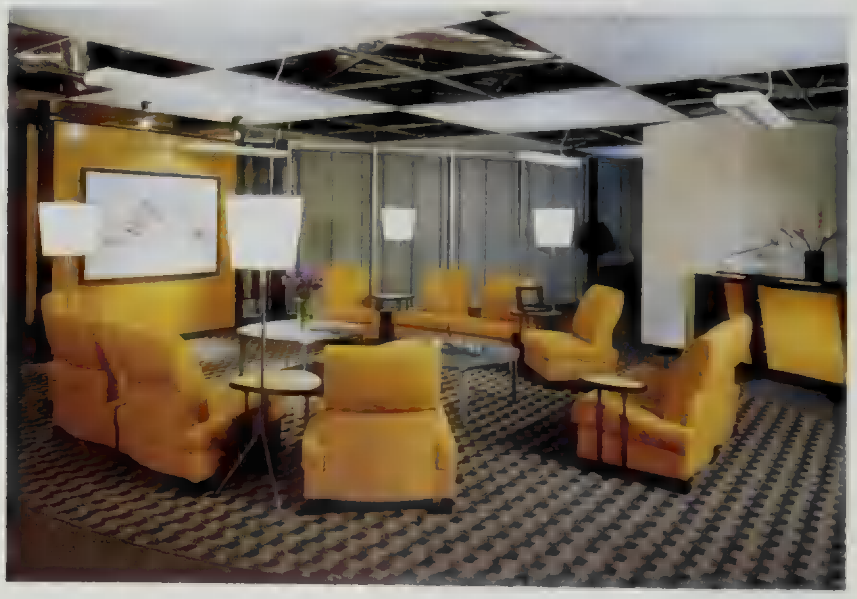
Two similar building entrances (above and opposite middle), used by all employees, are marked by a spire that captures light and directs it into the design studio and showroom. Manufacturing is located at the rear of the building (opposite top). A south-facing, 80-ft-wide window wall that brings daylight into the manufacturing plant (opposite right) is shaded by a series of translucent, diffusing louvers.

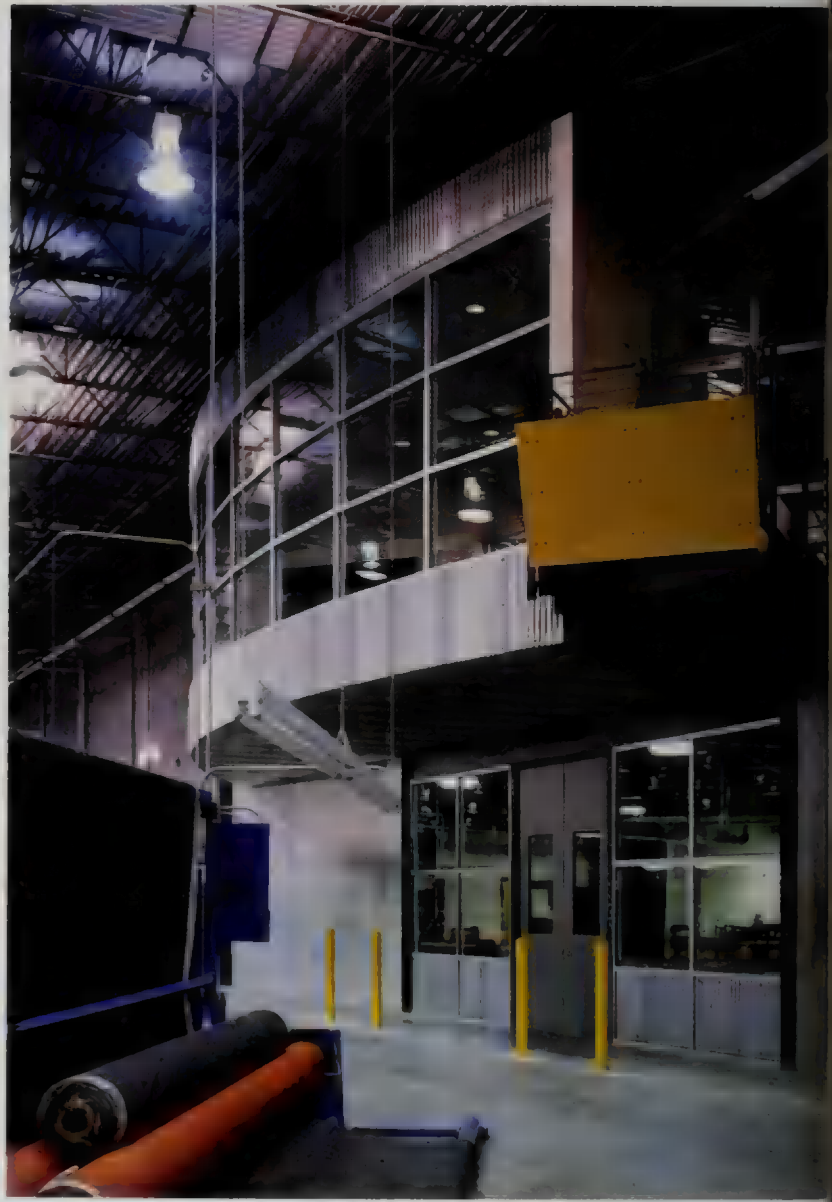


1. *Entrance*
2. *Showroom*
3. *Custom samples*
4. *Custom lab*
5. *Multi-purpose*
6. *Terrace*
7. *Lunch room*
8. *"Living room"*
9. *Conference room*
10. *Office*
11. *Standard samples*
12. *Manufacturing*
13. *Design studio*

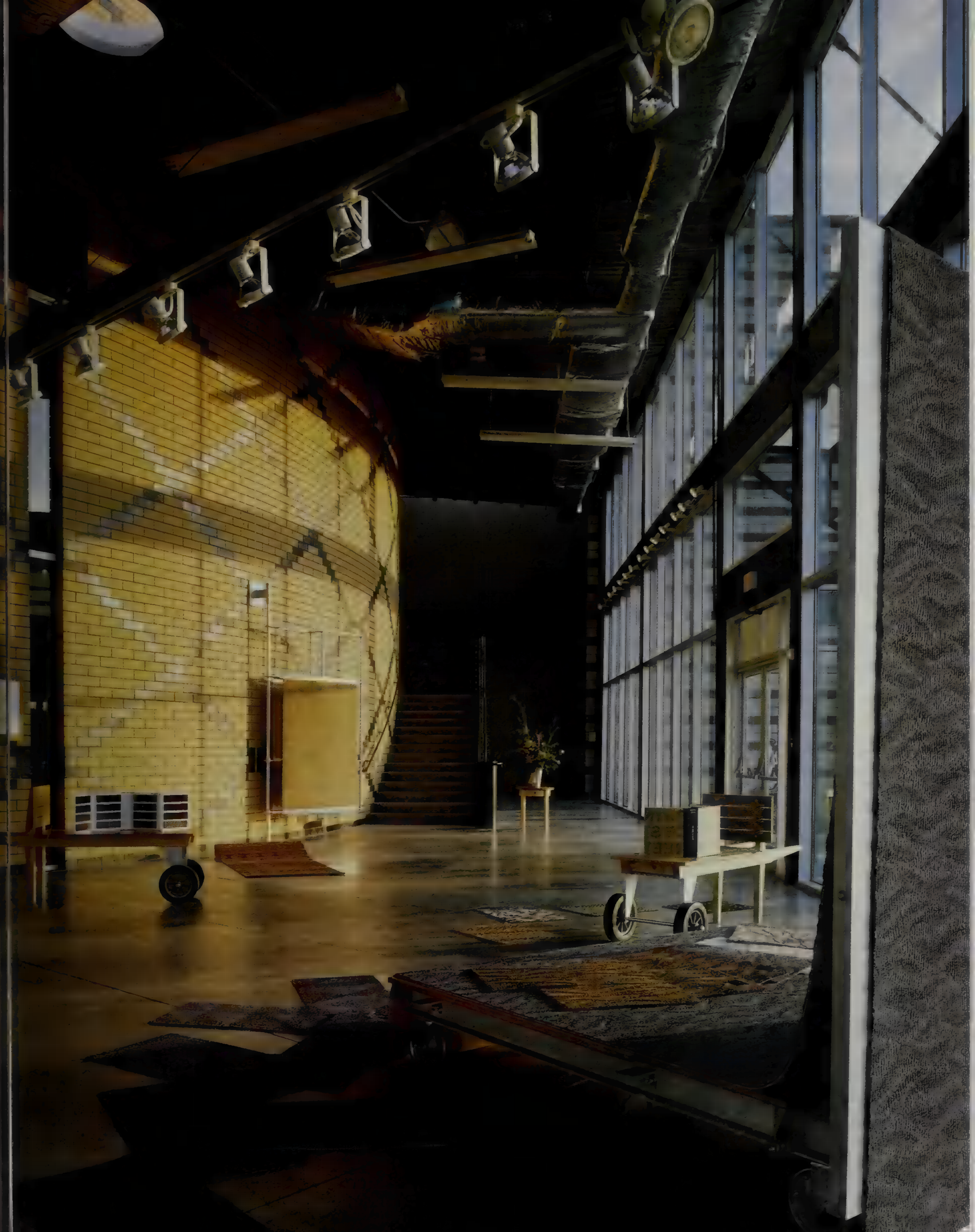
A glass-enclosed conference room (below left) can be used for formal meetings, but invites casual use. Similarly, the so-called "living room" (bottom left) doubles as a reception area and meeting place. Windows in the second-story design studio, and in the custom sample lab underneath, overlook the manufacturing plant (below), where the samples are made up. The 24-ft-tall, curved showroom (opposite), which receives abundant dayli through steel-and-glass walls, i a flexible entry space for displa sales, exhibits, and gatherings.







Credits
Prince Street
Cartersville, Georgia
Owner: *Prince Street Technologies—Joyce LaValle, president and chief executive officer; The Staubach Company, owner's representative*
Architect: *Thompson, Ventulett, Stainback & Associates—Ray C. Hoover III, principle of record; William R. Halter, Eugene Montezinos, Jeffrey Wierenga, Ashley Black, project team*
Engineers: *Browder & LeGuizamon (structural); Barrett, Woodyard & Associates (mechanical, electrical, plumbing); RBA Group (civil)*
Consultants: *Hughes, Good, O'Leary & Ryan (landscape)*
General Contractor: *Weeks Construction Services*



Researching Laboratory Trends

As technology changes and dollars for R&D facilities shrink, new strategies for designing labs have emerged in both the public and private sectors.

1

Carnegie Mellon University's Undergraduate Chemistry Laboratories (1) encourage cross-discipline collaboration by creating an open working environment. Relocatable lab tables replace traditional fixed casework. Exposed overhead utilities maximize syste flexibility (2). Utility drops occur only as required at workstations, facilitating future connections, while lowering costs for movin maintenance, and service. Angled lab benches delineate multiple work zones withi a larger space (3). Lab sinks are located at the ends of work stations for greater user access. Safety considerations include separation of student and chemical paths, unobstructed sight lines, and ease of movement around work surfaces and utility drops (4).

By Barbara A. Nadel

From California's academic medical centers to New Jersey's pharmaceutical corporate-office parks, a new generation of research laboratories is on the rise. Technology and science, along with competitive market forces and dwindling federal grant money, are driving research facilities toward generic, modular lab spaces with more public amenities. Experts predict the demand for laboratories will remain strong within research and development, academic, and corporate environments.

In mid-1995, an architectural trade magazine that has since ceased publication, sponsored a juried competition for all types and sizes of laboratory projects, both new construction and renovation. Three national lab experts reviewed over 200 submissions. The jurors were: Bruce Carmichael, Sc.D., executive director, facilities development and operations, Yale School of Medicine, New Haven; Steve Copenhagen, CEO, McLellan & Copenhagen Inc., Cupertino, Calif.; and Don Raney, AIA, director, architecture, planning and design/real estate services, Hoffmann-La Roche Inc., Nutley, N.J.

According to the judges, only a handful of projects successfully integrated technical parameters, programmatic needs, and inspired design solutions. Overall, however, the substantial number of lab projects from both academia and the corporate arena reflect the wide variety of programs and laboratory types being built in this active market segment.

> "Architects who direct lab design without understanding the issues force compromises that impair building performance."
>
> —Janet Baum, AIA, Health, Education + Research Associates, Inc.

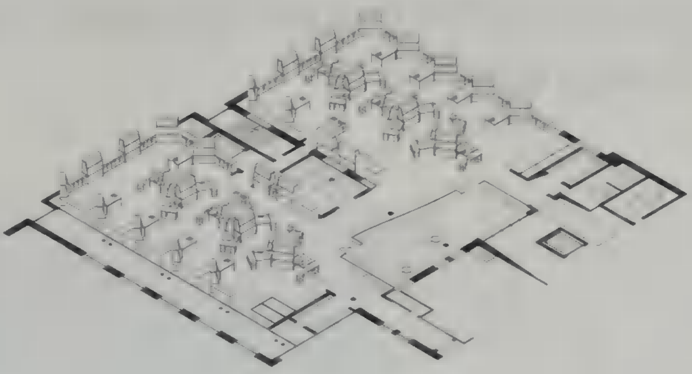
Barbara A. Nadel, AIA, is a principal of Barbara Nadel Architect in New York City, specializing in the programming and design of health, correctional, and institutional facilities.

Academic research

"There's a revitalization of science on campus, with more long-range strategic planning for these very complex facilities," says veteran lab planner Janet Baum, AIA, principal of St. Louis-based Health, Education + Research Associates, Inc. (HERA).

In the past, as prestigious academic medical centers scrambled to recruit top talent, researchers called the shots, asking for—an often getting—cavernous labs and office areas. Today, as federal medical research money becomes scarcer, organizations justif expenditures by examining occupancy patterns and densities. No longer do researcher have a blank slate or a blank check where facilities are concerned. Benchmarks and data bases now measure sq ft per person an quantify productivity per sq ft.

Occupancy patterns in technical building types change frequently. Lab design must anticipate different types of research and building systems, placing greater burdens o architects to understand the nature of research to be conducted and the related engineering processes. "Architects who direc lab design without adequately understandin the issues force compromises that impair



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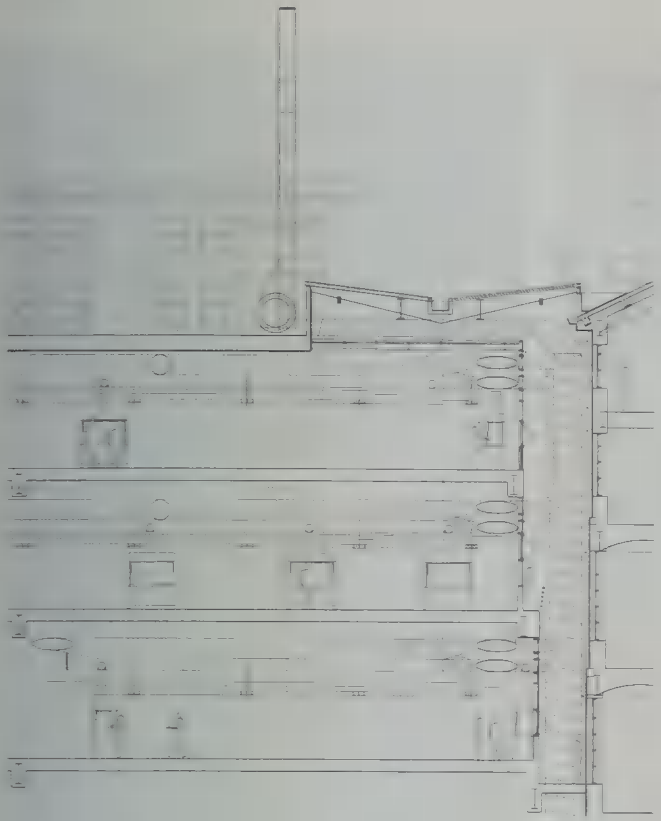
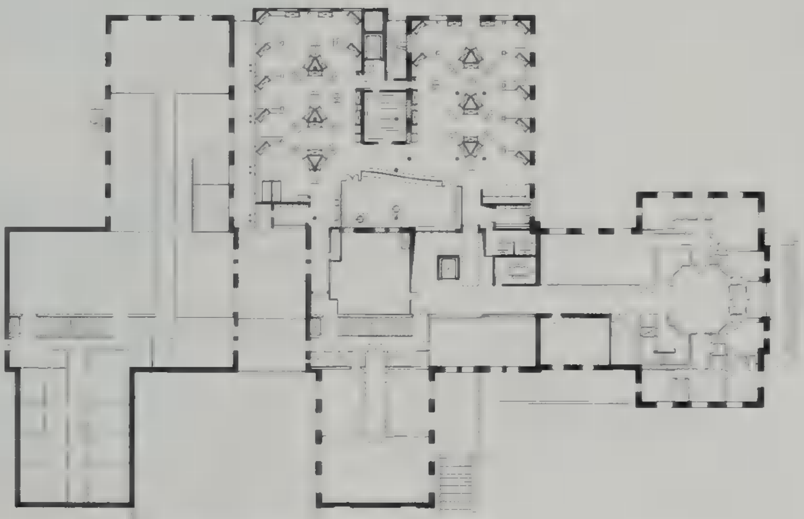




4

ritical building performance," says Baum.

ale's research facilities contain standardized b modules, with carrels at the end of wet enches. "After a while, the labs start to look like," states Carmichael. "More academic esearch is genetic and cellular, across multile disciplines. The nature of this scientific esearch is driving the design consistency."

orporate research and development

he highly competitive, market-driven pharaceutical industry fosters entrepreneurial ctivity by outsourcing basic research to mall start-up labs and universities. These imble, profit-oriented research incubators evelop new products. They need generic lab pace designed for flexibility and multi-use pplications, with minimal fixed equipment, lank walls, and low fit-up costs.

lthough co-locating scientists of different isciplines is difficult due to the nature of me-hood and mechanical-system requireents, a team-based facility trend is merging. Chemists have greater hvac eeds than biologists; both disciplines need eparate labs to guard against cross-contamation. Still, building a single building for ach is expensive.

"The trend is toward a small, fragmented group of people managing the R&D process. Discovery yields great promise for biotechnology," says Hoffmann-La Roche's Raney. To further cut costs and boost efficiencies, round-the-clock computerized testing can operate without lab personnel, vacations, or benefits. Within the pharmaceutical industry, the bottom line forces the acceleration of product development and getting new items to market before the competition. One month of sales can pay for an entire facility's project cost. Recruiting and retaining the select, highly-mobile group of top researchers around the country is part of the R&D game. Environmental design and the quality of space are viewed as recruitment tools and employment perks. "University research facilities have raised quality-of-life expectations, through well-designed conferencing facilities, gathering areas, and offices located close to labs, allowing social interaction," Raney adds.

Return on investment

Corporate entities seeking return on investment insist on economic feasibility studies before building new labs. In contrast, government organizations, such as the National Institutes of Health, are subject to congressional oversight, and thus remain acutely sensitive to spending taxpayer money wisely, by not building what one feisty senator terms "gold plated" facilities.

While government agencies and academia do not demand a profit-oriented return on investment, they need their own criteria to assess the value of these facilities. Budgets are increasingly tied to productivity, with grant-dollar production used to determine allowable construction costs per sq ft. While the amount varies by each institution, some use a rule of thumb, applying between $200 and $400 of grant money per sq ft as a goal for academic project construction. This rule is not the sole benchmark, but is a growing factor influencing overall space allocations.

Lab retrofits

"The science community is looking at improved environments. Academic research centers want architectural design qualities carried throughout their projects," says Copenhagen. These qualities—logical organization, public amenities, people spaces, design touches in corridors, a pleasant palette of colors and textures—enhance a lab building. When they are not included, purely

Continues on page 147

Laboratory Architecture and Design Projects Voted Most Progressive

In 1995, an architectural magazine sponsored a juried competition for laboratories. Over 200 projects were submitted for judging by three prominent lab experts; 18 projects received awards. The magazine closed in early 1996, before publishing the winning projects. RECORD is pleased to belatedly acknowledge the winners, below. Projects are listed alphabetically, by architectural firm.

Anshen + Allen. Cecil H. and Ida Green Earth Sciences Research Laboratory, Stanford University, Palo Alto, Calif. New earth sciences research labs.

William N. Bernstein and Associates, Architects. Biotechnology Incubator; Audubon Business & Technology Center, Columbia University, New York City. Biotechnology lab modules and offices.

Burt Hill Kosar Rittelmann Associates. Undergraduate Chemistry Laboratories, Carnegie Mellon University, Pittsburgh. Chemistry teaching labs, support spaces.

Centerbrook Architects and Planners. Neuroscience Center, Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y. Research labs, housing, parking garage.

Davis, Brody & Associates, LLP, Architects. Warren Alpert Research Building, Harvard Medical School, Boston. Research labs; animal facility, parking garage.

Ellenzweig Associates, Inc. Joslin Diabetes Center, Boston. Labs, animal facilities and public areas added atop existing building.

Ellerbe Becket Company. Earth Sciences and Materials Engineering Building, University of Minnesota, Minneapolis. Teaching labs, offices.

Garikes Wilson Karlsberger Inc. JMGR/ Lyons & Hudson. The J. Bennet Johnston Health and Bioenvironmental Research Building, Tulane University Medical Center, New Orleans. Environmental research labs and offices.

The Hillier Group. Du Pont Merck Pharmaceutical Co. Medicinal Chemistry Building, Wilmington, Del. Research labs, offices, library, public spaces.

Kallman McKinnell & Wood Architects. Bass Center for Molecular Biophysics and Biochemistry, Yale University, New Haven. Research labs, classrooms.

Kling-Lindquist Partnership, Inc. Glaxo Wellcome Research and Development Headquarters, Research Triangle Park, N. C. Research labs, auditorium

Kornberg Associates. Tananbe Research Laboratories, USA, San Diego. Chemistry and biology research labs, vivarium.

MBT Architecture. Biomedical Sciences Research Building, University of Washington School of Medicine; Seattle. Genetic research labs, vivarium, offices.

Payette Associates, Inc. Biotech Research Facility, Biogen, Inc., Cambridge, Mass. Biomedical research labs, offices, auditorium, public areas.

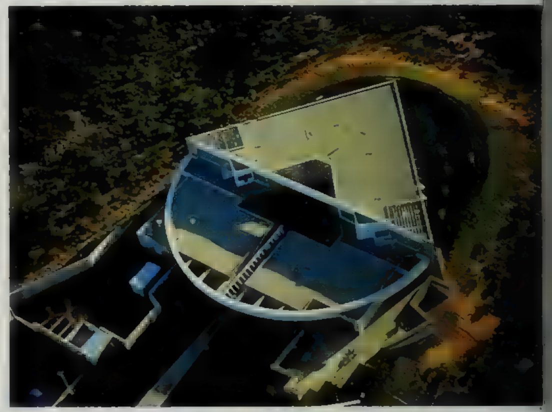
Payette Associates, Inc. Stevenson Chemistry Building., Vanderbilt University; Nashville. Synthetic chemistry research and teaching labs.

Payette Associates, Inc. Undergraduate Science Center, Washington and Lee University; Lexington, Va. Teaching and research labs, classrooms.

Robbie/Young + Wright Architects Inc. Chemistry and Computer Science Building York University, North York, Ontario, Canada. Chemistry and computer science labs, offices, classrooms.

Zimmer Gunsul Frasca Partnership. Fred Hutchinson Cancer Research Center, Seattle. Biomedical research laboratories, offices.

5



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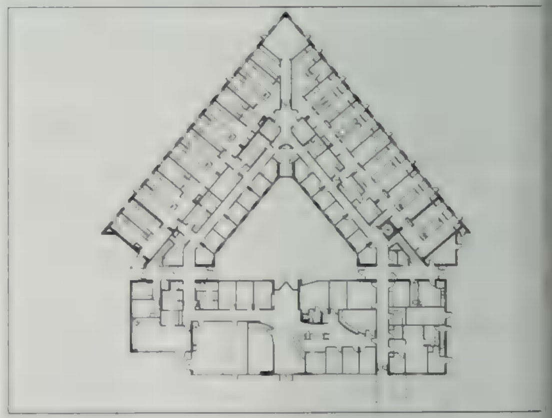
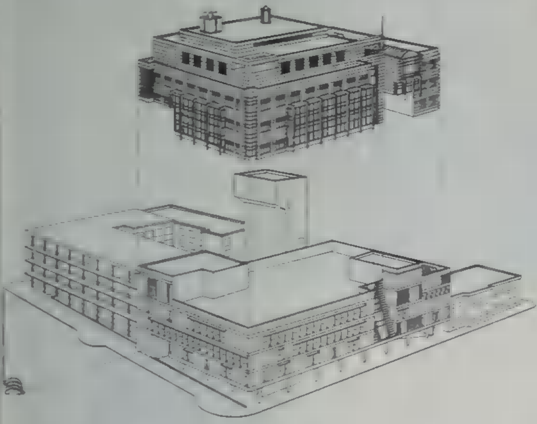


7

Biomedical Sciences Research Buildin *Urban context and outdoor connections remain important design elements for research facilities. The laboratory (5) is site to complement adjacent buildings and max mize magnificent waterfront views in labs and conferencing areas.*

Tananbe Research Laboratories *The la (6) is a research refuge for talent in the competitive drug-discovery business. Lab views overlook canyons, the ocean, and mountains To overcome language barriers in the lab's international staff, a corridor (7) concentrates researchers' traffic patterns.*

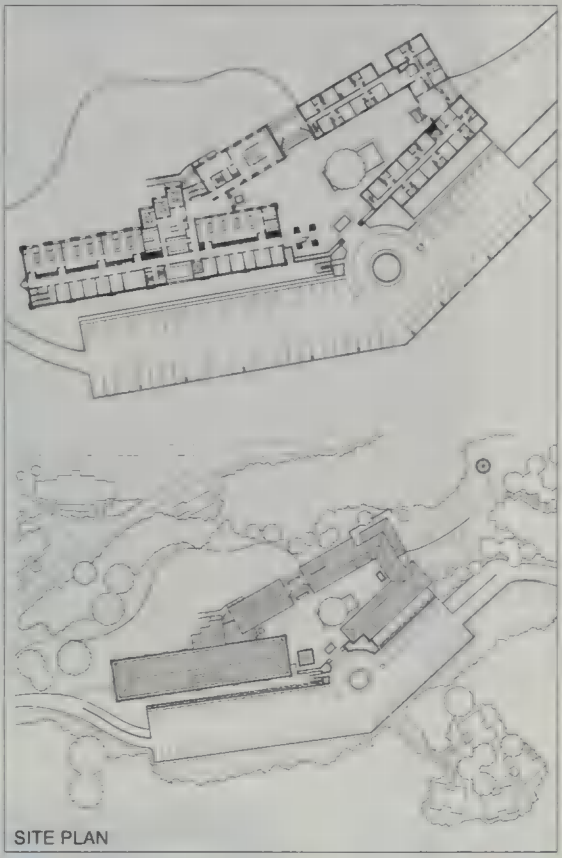


oslin Diabetes Center Research and
linical Facility Expansion *Capacity was*
oubled by adding three stories and a pent-
ouse atop a 1974 exposed-concrete building
n a restricted urban site—while maintain-
ng operations below (8, 9). Expansion space
ncludes labs for 64 researchers, administra-
ors, diabetes patients, and staff from
round the world. The design resolves three
ntrances on two levels, and accommodates
n Eye Institute by raising an existing
ourtyard 12 ft. A new skylit atrium, elevat-
d landscaped courtyard, and renovated
bby provide daylight while transforming
e character of the original building.

10

11

Green Earth Sciences Research Laboratory, Stanford University *The laboratory is designed as a pavilion (10, 11) with a central portal opening onto a plaza, and serves as a gateway to the north/south axis of the near-west campus. To balance the height limitations, campus-plan plaza requirements, and programmatic criteria, 50 percent of the space is below grade. A submerged plaza courtyard provides daylight to surrounding offices and labs. Partial interstitial space at the concourse level facilitates lab renovations without interrupting researchers in adjacent spaces.*



12

13

Neuroscience Center, Cold Spring Harbor Laboratory *Located on a steep hill in a residential neighborhood (12,13), the laboratory overlooks the research campus and Long Island Sound. The structure integrates three stories of labs, 60 guest rooms for visiting scientists, and a 150-car parking garage. Each workspace and lab has a harbor view. Outdoor study areas and public spaces are protected from the noise of a nearby highway. Energy conservation measures balance guest room heating and cooling demands with those in the labs.*

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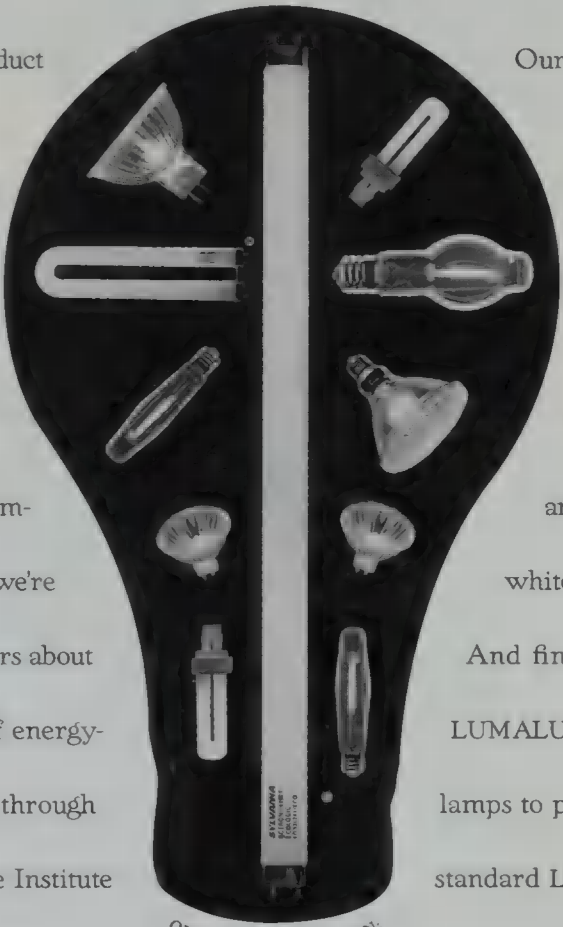

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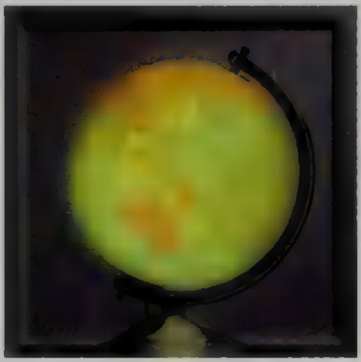
But perhaps the proudest result of ECOLOGIC is a family of lighting products unparalleled in the industry. This family includes our new REDUCED-MERCURY OCTRON®/ECO T8 Linear and CURVALUME,® which pass the TCLP test with the lowest mercury dose of any T-8 fluorescent lamps, and provide the great efficiencies that OCTRON T-8 lamps are already known for. Our new COMPACT FLUORESCENT DULUX®/ECO lamps, which pass the TCLP requirements, and feature a variety of wattages and color temperatures.



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Our HALOGEN CAPSYLITE®/ECO lamps, which meet disposal requirements with lead-free solder bases, while providing true, clean light. Our METALARC® PRO-TECH™ PAR/ECO lamps, which feature an industry-first lead-free base, and the most efficient form of metal halide white lighting available with no color shift. And finally, our HIGH PRESSURE SODIUM LUMALUX® PLUS/ECO lamps, the only HPS lamps to pass TCLP, with 90% less mercury than standard LUMALUX®, lead-free welded bases, and non-cycling technology to reduce maintenance costs.

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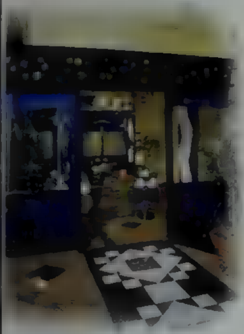
Circle 14 on inquiry card

Award-winning designer Barbara Lazaroff was highly selective in choosing Sunbrella Firesist® modacrylic fabric for The Wolfgang Puck Cafe's® latest locations. Partner to the world-famous chef in both business and life, she had a personal interest in making their restaurants the smash hit they've become.



Of course, she wanted only the highest quality fabric with long lasting solution-dyed colors. So for everything from hanging panels to umbrellas to silk-screened valances, she selected our arctic blue, sunburst yellow and solid black.

Plus, with fabric in close proximity to heaters, not to mention having the California Fire Marshal's Test to measure up to, she needed fabric second to none in safety. Sunbrella Firesist was the obvious choice. Because while some other materials are topically treated with chalky coatings or made out of vinyl, our fabric is woven from inherently flame-resistant fibers. As a result, it looks great while meeting stringent fire codes and the requirements for UL certification. It's also highly breathable for excellent energy efficiency. It comes with a five-year limited warranty. And it's available in 60" widths.

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Circle 15 on inquiry card

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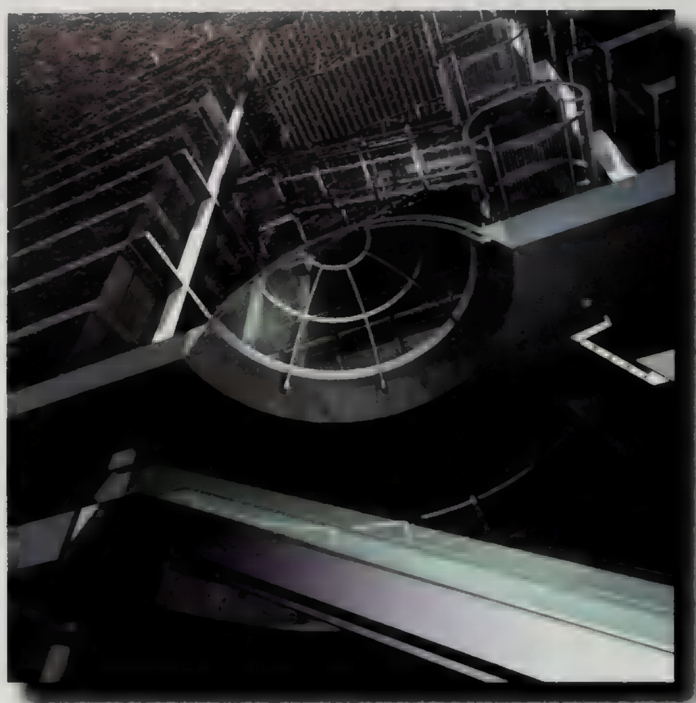

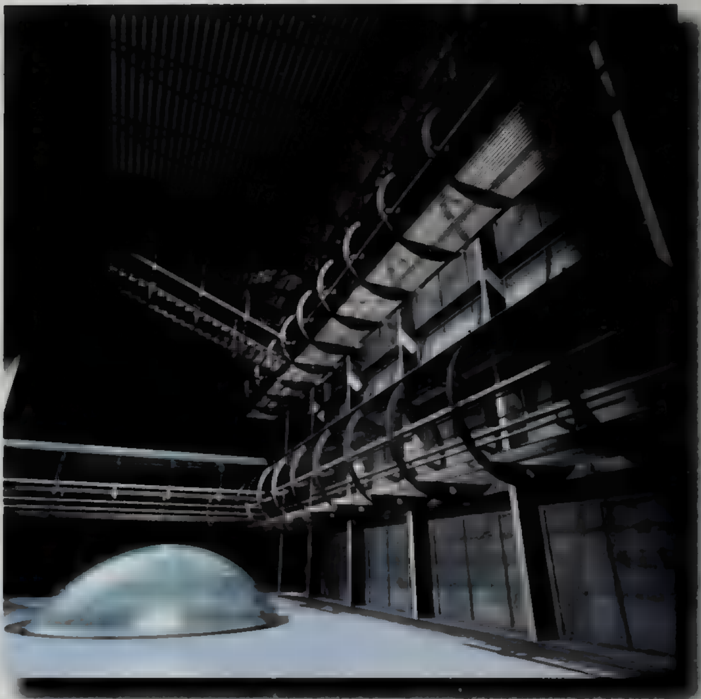

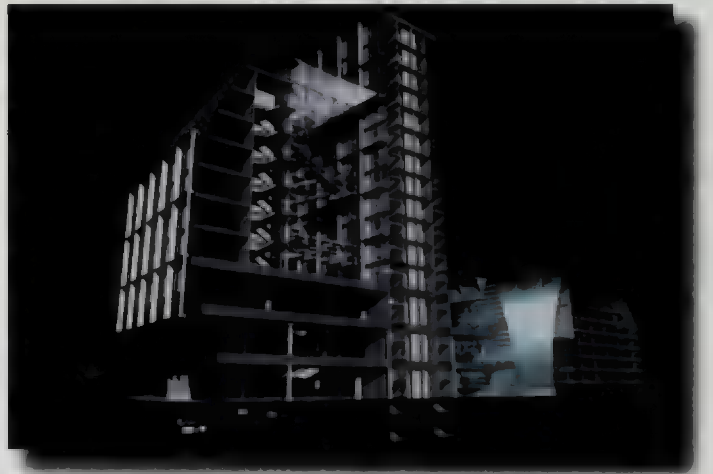

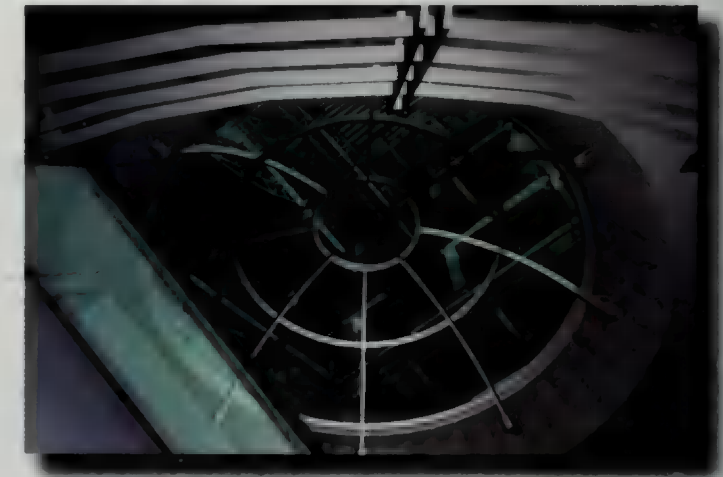

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PRODUCT REPORTS

Product Reports: new building materials chosen by RECORD editors and a panel of architects. Readers' Choice Awards: our survey identifies preferred products and technical support.

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RECORD's Panel Picks Top Products

RECORD's Product Reports—our take on the most interesting building-material introductions of the current year—returns for its 23rd installment. For the 1996 edition, RECORD recruited a "peer review" panel of design professionals to select those new products deemed most important for our architect, interior design, and specifying readers. We thank the panel for its efforts: reviewing hundreds of press releases, graphics, and technical brochures in a single sitting was pretty gruelling! Thanks also to all those manufacturers who took the time to respond to our request for submissions. Their assistance made it possible for us to offer this snapshot of the building-products industry, circa fall, 1996. Firms wanting to make sure they're on our mailing list to be considered for next year's edition should drop us a note with the name and full address of the appropriate party. Fax: 212/512-4256, or E-mail blatterm@mcgraw-hill.com.

Selection criteria

Manufacturers were asked to submit information on products new to the market. The panel looked for building products they considered innovations, not just line extensions. Some items were chosen because they filled a perceived need in the marketplace. Environmental and life-safety issues were prominent. One or two were editor's picks. But note: publication doesn't imply endorsement.

Some trends among 1996's crop: solar energy seems to be breaking out of its experimental corral (helped by legislation and utility deregulation) and is becoming a cost-effective supplemental energy option that architects should routinely consider. Others: high-pressure laminate flooring, originally European, now has a distinctive American aspect; there are more metal-roofing options; quick-build prison cells meet a burgeoning need. The pages that follow present building products grouped roughly in specification order. But first, we identify our "Top Five"—those products that the panel considered the most innovative and the most newsworthy—of all those they reviewed. *Joan F. Blatterman*

Note: The Desktop Directory formerly published in ARCHITECTURAL RECORD will be available in [illegible] McGraw-Hill's [illegible] on Information [illegible]

The intrepid panel.

Seated: James von Klemperer is a senior associate partner with Kohn Pedersen Fox Associates. Standing, from left: Raymond Hennig, AIA, CSI, is senior consultant architect for The Sweet's Group, where he advises building-product manufacturers on product information for distribution to architects and specifiers within the annual Sweets Catalog Files. Bradford Perkins, FAIA, AICP, is president of Perkins Eastman Architects PC, a 140-person firm based in New York City and Pittsburgh. Formerly with Perkins & Will, he was also the American managing partner of Llewelyn-Davies International.

Robert Schwartz is principal of Robert Schwartz & Associates, a six-member group that provides product-specification and technical consultation services to architectural firms in the New York metropolitan area. Tom Sansone, principal of TAS Design, provides planning and design services for the arts, entertainment, and related fields, with emphasis on highly crafted interior space.

The Top Five

36. Wall-mount faucet

ohler calls its sleek faucet “Falling Water”—ure to appeal to any architect. And it did: anel members thought having this option ould really unclutter sink surfaces. Spout omes in 6-, 9-, and 12-in. lengths; finish ptions include chrome, brass, and brushed ickel. 414/457-4441. Kohler Co., Kohler, Wis.

37. Industrial-style office

esigned by D'Urbino and Lomazzi to be a rational” approach to office work, a reconfig- ration of the Zero display system ses its characteristic open-web support eam to hold work surfaces, storage shelv- ng—even a small round table for little eetings. Pictured: a computer table, with minated-panel top set on aluminum legs. 01/724-4470. Zero U.S. Corp., Lincoln, R.I.

38. Photovoltaic curtain wall

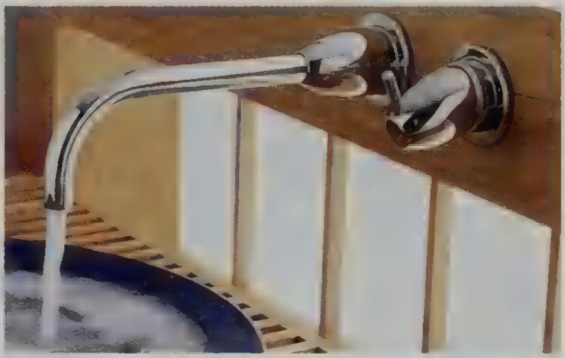
he PowerWall is a standardized way to inte- rate efficient polycrystalline solar cells—and he necessary inverters and connections— nto an otherwise conventional curtain-wall ame. Designed for optimal electric produc- on, the photovoltaic panels are opaque. nstalled with regular glazing techniques to ecome part of the building's weather enclo- ure, panels meet wind-load, impact, seismic, nd air-infiltration tests. 770/449-5555. awneer Co., Inc., Norcross, Ga.

39. Solar glazing

ilkington describes Optisol as an architec- ural photovoltaic glass that can be ncorporated easily into facades, spandrels, indows, and sloped glazings. A resin-lami- ated makeup developed in Europe, Optisol as two panes of glass sandwiching thin-film hotovoltaic cells, and allows varying degrees f view-out and light transmission while gen- rating electrical energy. 202/463-4699. ilkington Solar Int'l., Washington, D.C.

40. Dual-function ceiling

n elegant combination of two tasks, the Hi- R Ultima acoustic panel reflects a high level f incident light, making the ceiling particu- arly suited for indirect-lighting applications. s non-fissured surface resists scratches and irt buildup. Maintained-light-reflectance alues can be figured into illuminance calcula- ons for reflected ceiling plans. 800/448-1405. rmstrong World Industries, Lancaster, Pa.



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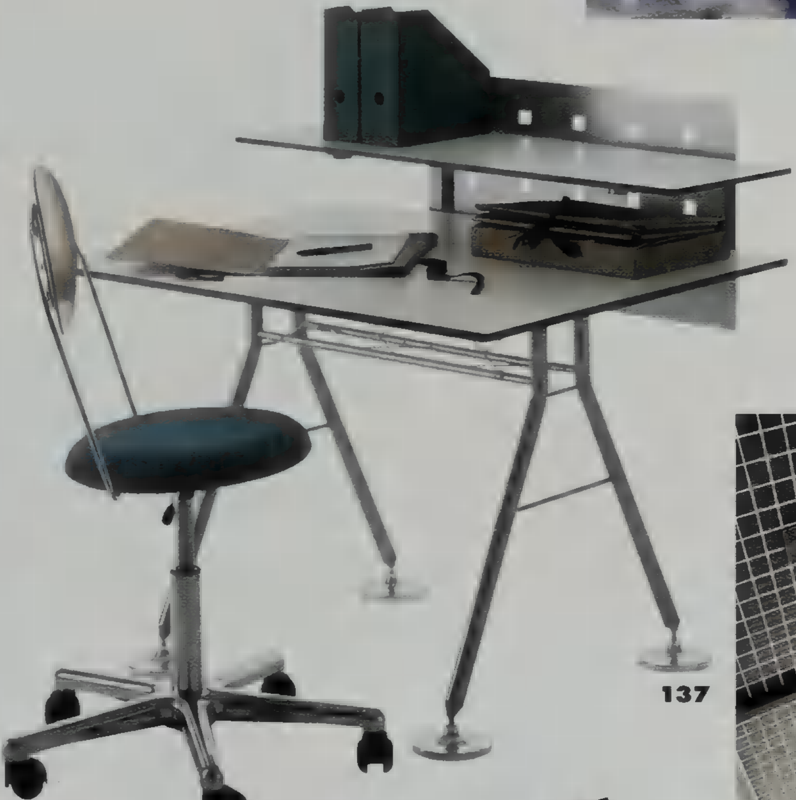

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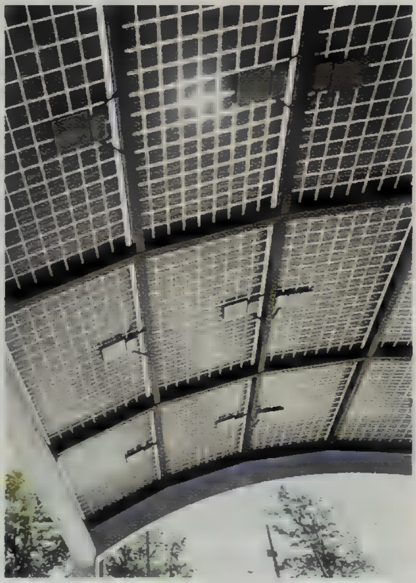

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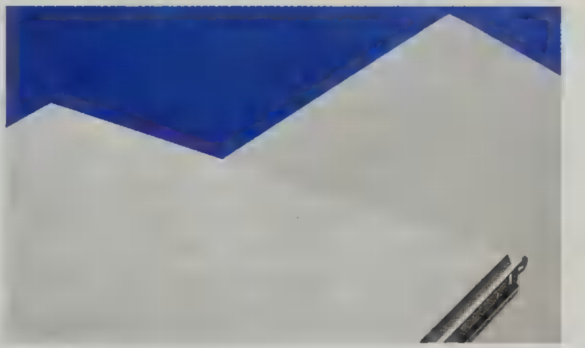

Readers' Choice Awards

Readers' Choice Awards are ARCHITECTURAL RECORD's way of recognizing those manufacturers of building products, systems, ar materials who make a meaningful contribution to safe and successful architectural projects in this country. We wanted to identify the sourc that our readers rely on to furnish competent, good-value products that translate an architectural design or interior scheme into functional, lo maintenance environments.

A survey circulated in the August 1996 issue asked our readers to list their preferences among the building products they worked wit designed for, and specified to meet real-world architectural and interior-design needs. We wanted responses to several types of questions abo their experience with building-industry manufacturers, both people and products. The first section of the survey listed 23 product types, pr sented in specification order. For each of these, from computer tools like CAD software to interior lighting fixtures, the question was t following: Please nominate a single manufacturer whose product best represents—in your opinion—an optimal combination design/cost/value/service life within this category. The firms that received the most mentions within that category are our winners. In a fir ever, we list the recipients of ARCHITECTURAL RECORD's **Readers Choice Awards for 1996:**

CAD software	Autodesk	**Architectural glass**	PPG Industries
Computer	Gateway 2000	**Roofing system**	Carlisle SynTec Systems
Practice software	Microsoft	**Entrance system**	Kawneer Co.
Peripherals	Hewlett-Packard Co.	**Residential window**	Andersen Windows
Landscape accessory (TIE)	Landscape Forms Forms+Surfaces	**Commercial window**	Kawneer Co.
Unit masonry	Pittsburgh Corning	**Interior finish**	USG Interiors
Architectural metalwork	Julius Blum & Co.	**Resilient flooring**	Armstrong World Industries
Surface options	Wilsonart International	**Commercial ceiling**	Armstrong World Industries
Engineered wood	TrusJoist MacMillan	**Commercial carpet**	Mohawk Industries
Exterior cladding	Dryvit Systems	**Plumbing fittings**	Kohler Co.
Door hardware	Schlage Lock	**Light fixture**	Lightolier, Inc.

The second part of RECORD's survey asked readers about broader aspects of building-product characteristics, and attempted to call out tho manufacturers who supplied architects and designers with a superior level of technical education and sales support.

Trouble Shooter The manufacturer most helpful in solving site-specific, design, or technical problems. Three firms received an equal numbe of mentions: USG Interiors, Pella Corp., and Dryvit Systems.

Green Architecture [illegible] contribution to green architecture—Homasote Co.

ADA Standards The [illegible] useful in meeting ADA access standards—Bobrick Corporation.

Most Interesting New Produ [illegible] The most interesting new product used or heard about recently, attracted too many [illegible] a product type, not a specific manufacturer, was written on the survey. But looking at t [illegible] the trends for 1999's Product Reports! Many citations referenced environmental and life- [illegible] quotes will convey the idea: Fireproofing decorative paint / Siding made of fibrous [illegible] Dry fire-sprinkler systems/ Hvac ductwork made of fabric / Solid-plastic toilet [illegible] joists / Rain-screen EIFS / Foam-filled CMU / Exterior decking made of woodfibe [illegible] All-glass corner windows / Reflective insulation / Fiber-optic lighting.

Light reveals architecture...the TechCenter reveals light.

Our new multi-million dollar TechCenter has been designed to help you become a better user of light. Featuring an extensive array of interactive hands-on exhibits, the TechCenter offers a new way to experience how light and the architectural environment interact. During your visit, you'll gain a greater understanding of lighting technology and design; compare the impact of different lighting on various architectural spaces; plus see how our design, testing and manufacturing facility takes our products from concept to reality. The vision and knowledge displayed in our TechCenter is also present in every product we make. Which is why the readers of *Architectural Record* have chosen Lightolier as the *1996 Reader's Choice Award Winner* in the Interior Lighting Fixture category. To see for yourself how the TechCenter and Lightolier products demonstrate **lighting that makes a difference,** contact your local Lightolier sales representative.

WINNER
ARCHITECTURAL RECORD
1996
READERS' CHOICE
Interior
Lighting
Fixture
Category

LIGHTOLIER

Circle 17 on inquiry card

Our final question on the Readers' Choice ballot asked: *Which manufacturer has the best rep? The individual who made a critical contributio to a project, who helped solve a technical or site problem, or who made your design work?*

Given the geographic range of the responses, this question drew very individual answers, though a few firms were cited more than once, for different representatives (see list, below). But what we found out was how vital these manufacturers' reps are to the success of individual architects, wh rely on these building-product experts for the advice and technical support that can make a project work. Listed below, in alphabetical order by th manufacturer, are many of the individual representatives cited on Readers' Choice ballots.

Manufacturer	**Representative**
Acme Brick Co.	Bob Laborde
Advance Lifts, Inc.	Thom Klatt
Alply, Inc.	John Shremp
Andersen Windows	Bob Miembrise
Andersen Windows	Dan Redmond
Andersen Windows	Doug George
Architectural Wall Systems	Mike Cunningham
The Belden Brick Co.	Steve Harvey
The Belden Brick Co.	Tim Pedkio
Benjamin Moore & Co.	Bill Farmer
Birdair, Inc.	Philpots & Assoc.
Brixment	Charlie Mifflin
Cold Spring Granite	Dale Schueppenbach
Collins & Aikman	Karen Popucki
Cooper Lighting	Steve Taylor
Dal-Tile Corp.	Dick Patrick
DesignTex, Inc.	Carolyn Eppler
Dover Elevator Systems	Steve Hunter
Dryvit Systems	Dale Serroka
Elliptipar, Inc.	Diane Willis
Essex Industries	Larry Adams
GAF Materials Corp.	Dario L. Miranda
General Electric Lighting	Lie Huang
Glen-Gery Corp.	Don Foster
GRG Technologies, Inc.	Bob Kidd
Hurd Millwork	Paul Emmerich
Interface Flooring Systems	Jackie Evans
J.M Specialties	Jerry Miwer
Kalwall Corp.	Peter Wenn
Kawneer Co., Inc.	David Potter
Kawneer Co., Inc.	Greg Carusle
LCN Closers	Jeff Loss
[illegible]	Danny [illegible]
[illegible]	Al [illegible]
[illegible]	C. [illegible]
Marvin Windows & Doors	Jim McAndrew
Marvin Windows & Doors	Bruce Meekins
Marvin Windows & Doors	James E. Pelowski
Marvin Windows & Doors	David Morris
Modernfold, Inc.	Robert Styles
Nova Seals	Thom Klatt
Pacific Polymers, Inc.	Stephan Klaus
Pella Corp.	Bob Splittgerber
Pella Corp.	Alan Rogers
Pella Corp.	Leo Palizza
Pella Corp.	Ned Habdank
Porter	Mike Elkis
P.P. Altec	Kall Zimmermann
Rocky Mountain Prestress	Bill Field
S&S Resource Connection	Steven Schultheis
Sargent Mfg. Co.	David Lancaster
Schlage Lock Co.	Jeff Loss
Schuller International	Dan Holland
Schuller International	Bob Kobza
Scott Paint	Lewis Lyons
Shaw Industries	Diane Ashby
Shaw Industries	Judith Ward
Staff Lighting	J.C. Wright Lighting Sales
Summit Tile Co.	Ed Klinges
Sunshine Supply San Diego	Ed Waldman
Tamko Roofing Co.	Bob Sobel
Tarkett, Inc.	Jim Gaygan
Tnemec Co., Inc.	Russ Brown
Trus-Joist MacMillan	Stevenson Lumber
Trus-Joist MacMillan	Enrique Lima
U.S.G. Interiors	Daryl Hickman
U.S.G. Interiors	Richard Smith
U.S.G. Interiors	Keith Johnson
Weather Shield Mfg., Inc.	Roz Culebra
Weather Shield Mfg., Inc.	Rob McGregor

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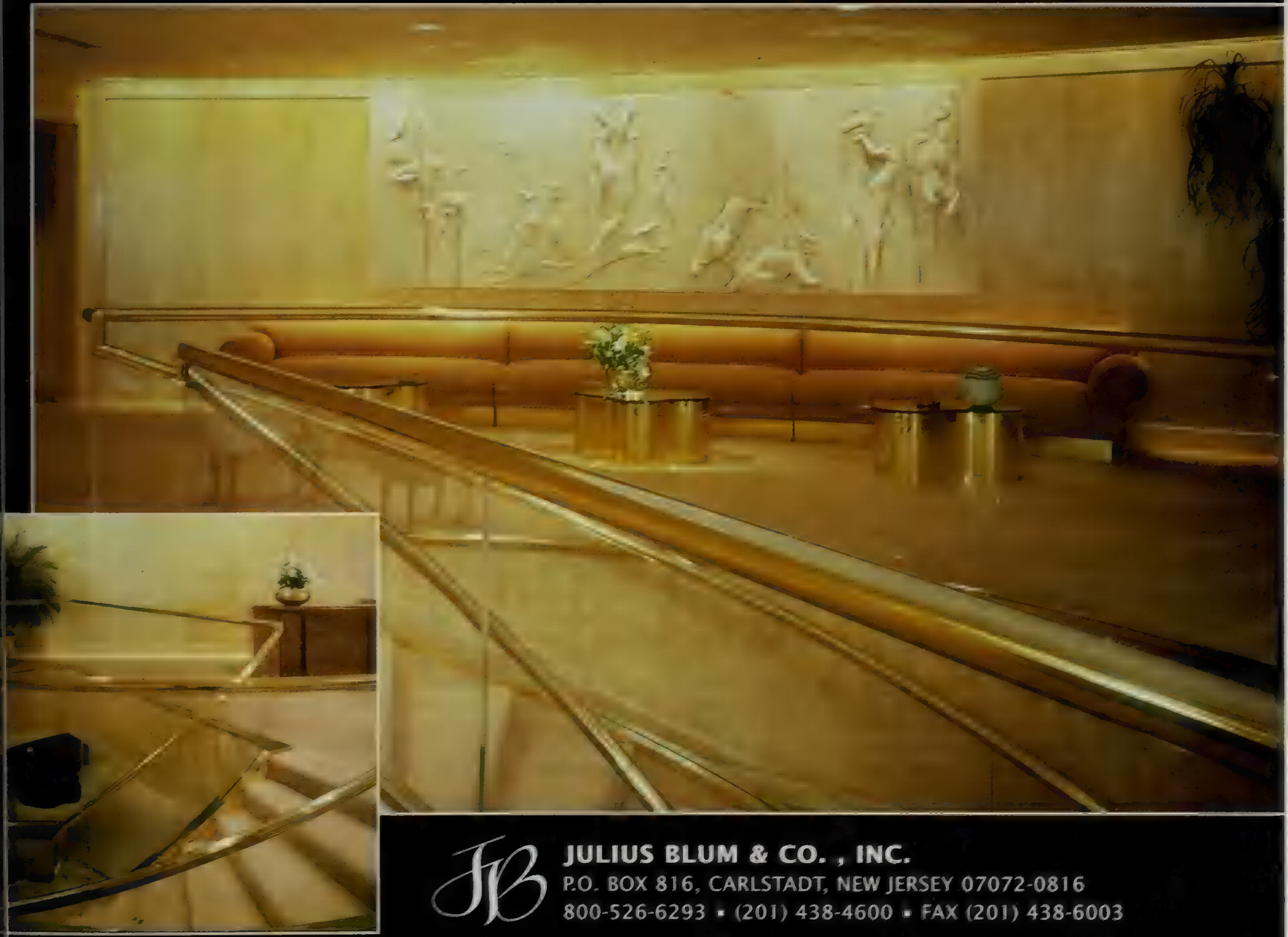
Julius Blum Glass Railing is an economical system of metal railing components for use with ½" and ¾" tempered glass panels as structural balusters. Handrails are available in aluminum, bronze, nickel-silver and stainless steel, together with endcaps, internal splice connectors, corner bends and a vinyl protective insert to shield the edges from direct contact with metal. Julius Blum designed this system of metal railing with matching stock components to speed fabrication and assembly, thereby saving you time and money. For more detailed information about stock metal components for the fabrication of self-supporting glass panel railings and other fine products, call or write for our comprehensive Catalog 16.

Julius Blum is the nation's most complete source for architectural metals.

ARCHITECTURAL RECORD
1996
READERS' CHOICE



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Circle 18 on inquiry card

1. New expand [illegible] text object ha[illegible] wrap and flexibl[illegible]nment

2. Easy to change [illegible] style attributes of individual text characters such [illegible] color, height, obliquing angle

3. New text style dialog (DDSTYLE) gives more access to create, edit, and set text styles.

4. Easier to underline and overscore text

5. Easier to edit text with integrated, dialog-based text editor.

6. Cut, copy and paste in the MTEXT editor.

7. Object grips can be used to modify the width of paragraphs.

8. AutoCAD text now supports True-Type and PostScript® Type 1 fonts.

9. Spell Checker includes standard and custom dictionaries.

22. You can suppress the first or second dimension line.

23. Baseline and Continue dimensioning have been streamlined.

24. Baseline and Continue dimensioning work on angular dimensions.

25. DDIM dialog box allows preview prior to input and improves access to properties.

26. Dimensioning better follows industry and international standards, including ANSI, ISO, and JIS.

27. Dimension styles are more flexible and easier to create.

28. Override feature allows you to change properties on a per-dimension basis.

29. Geometric tolerancing creates and edits tolerance control frames automatically.

43. The ability to create and use custom linetypes with text and shapes.

44. Assign linetype scale factors per object (versus per drawing).

45. ISO Compliance of linetypes.

46. DDMODIFY has been dramatically improved.

47. Direct Distance Entry eliminates laborious coordinate keyboard entry; allows you to move the mouse in desired direction and enter a single distance value.

48. Object snap now snaps to extended intersections.

49. Running object snap dialog box is now transparent.

50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.

63. Boundary edges don't need to physically cross the objects you wish to Extend.

64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.

65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.

66. New overlay option in the Xref command avoids circular references.

67. The Xref command now searches the AutoCAD path to find referenced drawings.

68. Purge your drawing at any time.

69. Easy to create construction lines that extend infinitely in both directions (XLINE).

70. Easy to create construction lines that extend infinitely in one direction (RAY).

85. Solid profiling co
allow you to convert 3
(SOLPROF/SOLDRAW/S

86. Create regions

87. Extrude along a p

88. Determine mass
of a model.

89. Fillet and chamf

90. Faster solid mo
processor and smaller
sizes than AME.®

91. Control the dis
tessellation lines (isoli

92. Import and expor

93. Translate AME m
R13 solids.

94. Rendering is faster

95. New colored sp

96. Phong shading s
highlights from color
source.

97. Material Library
included.

For all those who ha
"Can AutoCAD Release 13 really ma

10. Easily import [illegible] TXT file

11. Create stacked fractions for better readability

12. Single-line MTEXT editor for DOS users

13. Map slower fonts to faster ones (FONTMAP)

14. Fill in text fonts (TEXTFILL)

15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT)

16. Move, rotate, erase, copy, mirror, stretch, or scale each text object

17. Automatically stack [illegible] dimensions

18. [illegible] dimensioning [illegible]

19. [illegible]

30. Easier to modify dimensions

31. Dimensioning has its own units settings

32. Create splined leader lines.

33. Create multiple lines of text in leaders

34. Automatic island detection finds a complete boundary with one pick.

35. Associative hatching automatically updates hatch to modified boundaries

36. The restructured BHatch dialog box [illegible] simpler and faster to use

37. Drive the BHATCH command from the command prompt if desired to run scripts

38. Create a hatch boundary manually on the fly

39. Easily edit hatch properties without redrafting the hatch

40. New ISO compliant hatch patterns included

41. [illegible]d linetypes from within [illegible] box

[illegible] representation [illegible] selection

51. New FROM object snap can reference [illegible] point from within [illegible] command.

52. Object Cycling insures that you select the correct object every time.

53. Improved Fillet command can be used to cap parallel lines.

54. Fillet between a line and a polyline

55. Fillet without trimming the existing geometry.

56. Fillet that doesn't cancel when you miss the object.

57. Chamfer by length and angle

58. Chamfer without trimming the existing geometry.

59. UCS restrictions are gone for fillet and chamfer commands

60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).

61. Cutting edges don't need to be on the same UCS as the objects you're trimming.

62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).

71. Group objects together by name with object grouping (GROUP).

72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).

73. Intersection clean-up for multiple parallel lines simplifies wall creation.

74. Save multiple MLINE styles for quick access.

75. Fill in parallel lines with [illegible] different color (MLINE).

76. True geometric Ellipses.

77. Snap to the center or quadrants of an ellipse.

78. Create elliptical arcs.

79. Create NURB splines.

80. Specific editing commands for greater control of new splines.

81. Explode blocks with varying X and Y scale factors.

82. Solid modeling included in base AutoCAD.

83. Create ACIS solids with solid primitives.

84. Perform Boolean operations on solids and regions (union, intersect, subtract).

98. Assign materials
by layer.

99. Import and expo

100. Render to file
only; supports over
new file formats.

101. Windows stan

102. Standard Toolb
icons for high-usag
management and d
editor navigation fu

103. Easy to create
custom toolbars.

104. Toolbars can
be docked.

105. Object Proper
offers quick access
color and linetype fu

106. Easy to unders
with tool tips.

107. Drag and dro
editing.

108. Preview draw
opening to speed
identification and av
the wrong file.

109. See a visual
tion of WBLOCKS b
insert them.

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omize your keyboard
erator keys.
bar flyouts included.
t frequently used
tions float to the top
it.
l bars permit easy

oved user feedback
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sted tablet menu.
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the existing AutoCAD
partial menu loading
new current layer
n layer control feature
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ock, from the layer
ture of the Object
Toolbar.

mand prompt is now
a resizeable and
window.
the command
he clipboard.
oCAD has added a
e to find drawing files.
al viewer has been
d it more user friendly.
have to reload
each drawing load.
ains a simple to use
icon editor.
ller and full menus.

y to retain Release 12
s and command line
se learning transition
on-line documentation
CD-ROM.
t-oriented
lation.
oved on-line Help
line command

line Tutorial steps
sic features.
he Quick Tour shows
 capabilities.

134. On-line What's New shows overview of new features in Release 13.
135. Cue Cards walk you through basic CAD operations.
136. CD-ROM installation is faster, easier.
137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95.
138. Typical, Custom or Minimum install options.
139. Configuration files are now portable and ASCII.
140. No more ACAD.PWD file.
141. The ability to turn off the automatic Backup files.
142. Improved control over memory management.
143. OLE 2.0 with drag and drop allows you to dynamically embed spreadsheets, video clips, Word documents into AutoCAD drawings (or AutoCAD drawings into a Word document).
144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
145. Read drawing files created in previous AutoCAD releases.
146. Save as a Release 12 drawing file.
147. ARX(object-oriented development platform) allows for tighter integration with 3rd party software.
148. Broad peripheral support.
149. Undo support for external database links and operations.
150. Output to STL format.
151. Xref and Block support for non-graphic links.
152. ASI access to ASE link mechanism.
153. ASILISP contains new LISP functions for accessing external databases.

154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
156. Real-time Pan.
157. Real-time Zoom.
158. Incremental saving of the drawing file.
159. Faster regens due to more drawing data stored in memory during working session.
160. No regen on Window resize.
161. Optimized output on selected Windows system printer drivers.
162. Improved HP GL/2 plotting performance on Windows and DOS platforms.
163. ADS applications run faster.
164. AutoLISP programs run faster.
165. Pager included for large drawing memory management.
166. Multiple sessions of AutoCAD.
167. Windows 95 user interface.
168. Support for Long Filenames.
169. Supports Universal Naming Convention (UNC) for Files and External References.*
170. Supports UNC for configuration files.*
171. Uninstall from Windows 95 or NT through the control panel.*
172. Email enabled for MAPI compliant programs allows users to attach DWG files to an email.*
173. DOS, Windows 3.1x, Windows NT 3.51, Windows 95.
174. Windows NT on Alpha Systems.
175. UNIX®; Sun® Solaris,® HP-UX,® SGI IRIX,™ IBM-AIX.®
176. Ability to generate .DWF files and make your drawings available over the Internet.

We understand. You may not have the time to read them all. But, suffice it to say that we have added scores of new features to AutoCAD® Release 13 to make your life on the job easier and less labor intensive than ever before.

Case in point: Release 13 was designed for both Windows 95® and Windows NT,™ letting you leverage your knowledge of Windows and giving you access to the features you use the most. In fact, R13 on Windows 95 and Windows NT lets you work 20% faster than if you were working on Windows® 3.1x.

Release 13 also supports AutoCAD Runtime Extension (ARX) applications from developers like KETIV Technologies, Inc., ARCHIBUS, Inc., and Softdesk, Inc. These next generation tools use the object-oriented database in R13 to provide you with a seamless and associative design environment. Plus, R13 has Internet support, so now you can view, send, and share design content over the Internet.

So look into award-winning AutoCAD Release 13 software. Hundreds of thousands are already enjoying its 176 new features. How many more reasons do you need?

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Design Office Equipment

CAD Software • Management Software • Peripherals • Drafting Desks

141. International software

Allplan FT for Windows is the first specifically North American product from a major European developer. It takes the building design from early sketches through massing studies and modeling, to layout and detailing, to quantity takeoffs, production documentation, presentation graphics, and animation. Object oriented, Allplan FT works with building elements, such as walls, windows, roofs, and doors. Available in 10 different language versions; price: $4,995. Call 800/479-0735. Nemetschek Systems, Inc., Mill Valley, Calif.

142. Rendering program

Artlantis Render delivers fast raytracing, procedural shading, and texture mapping. Includes more than 100 shaders. User can add own pictures of materials, people, and backgrounds. Adjusts lights and camera angles in real time. Operates with Windows '95, Windows NT, and Mac OS, and designed to complement ArchiCAD, ZOOM, and other programs that export 3D DXF files. 415/703-9777. Graphisoft U. S., Inc., San Francisco.

143. ADA software

For guidance through the maze of ADA regulations, ADA Design Assistant integrates with Softdesk's Auto-Architect to extract all available information from a building design and measure it against critical ADA requirements. For example, doors are checked for clearances and obstructions by recognizing building components and warning of insufficient clearance situations; ramp layouts are aided by a slope calculator. 205/972-9101. Softdesk, Inc., Henniker, N. H.

144. Scheduling software

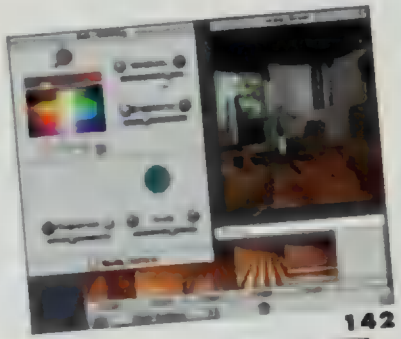
FastTrack Schedule creates and updates Gantt chart schedules rapidly. It outlines and summarizes projects with unlimited sublevels. Tracks projects' scheduled, revised, and actual dates; activities link graphically to show dependencies. Price: $299. Call 703/450-1980. AEC Software, Inc., Sterling, Va.

145. Architectural furniture

The Computer-Aided Design Workstation Bend Top, from Haworth's new Crossings office collection, comes with extra-wide, winglike arms to accommodate CAD peripherals and digitizer pads. Designed for the specific needs of CAD users, the workstation top adjusts in proximity to the monitor, the keyboard, and the height of the work station. 616/393-4293. Haworth, Inc., Holland, Mich.

146. Adjustable CAD station

Designed to help reduce the risk of computer-associated health problems, the Proactiv computer work station makes the keyboar pad/work station and monitor fully and effortlessly adjustable. Designed to permi constant fine-tuning of the spatial relationship between the "Ergonomic Triangle": th eyes, the keyboard, and the monitor scree Adjustments are made at a touch, withou motors, cranks, or gas cylinders. Optiona keyboard pads accommodate oversize an digitizer applications. Can be retrofitted int popular furniture systems. 215/766-8545 Ergogenic Technology, Inc., Pipersville, Pa.



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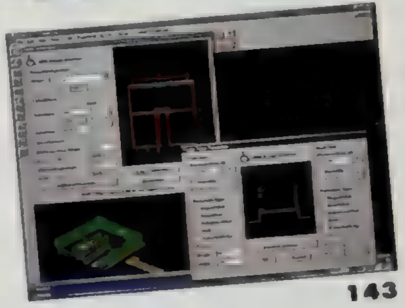

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Fast
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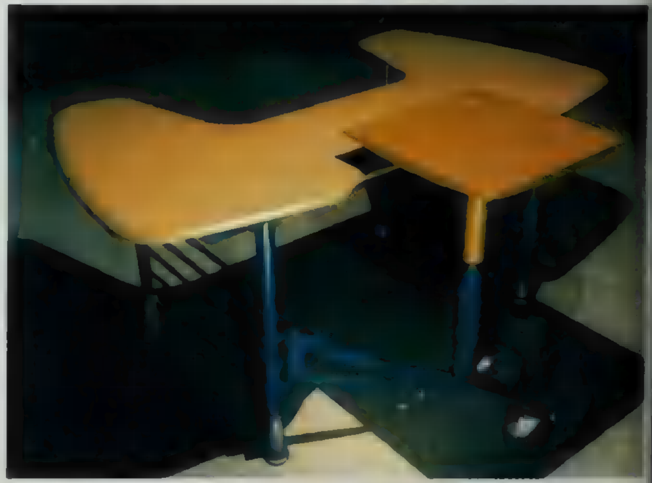
Schedule
Simple Scheduling. Impressive Power.
Simple Scheduling. Impressive Power.
FastTrack Schedule
4.0

144



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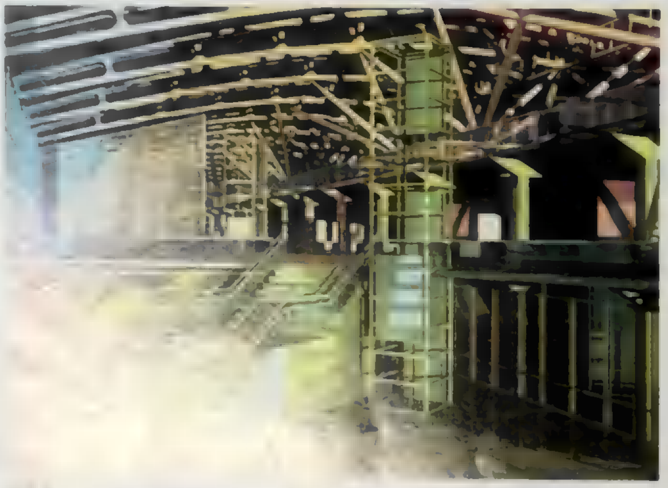

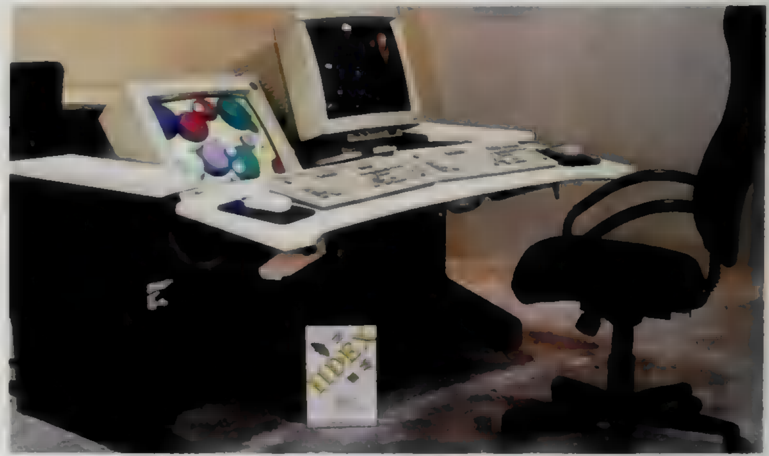

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47. Lighting visualization

he Lightscape Visualization System, a "next eneration" lighting and visualization soft- are tool for Windows NT and SGI systems, ccurately simulates the behavior and physi- al properties of lights and materials, elivering unusual scenes of realism and real- me interactivity. Lightscape is compatible ith a wide range of 3D modeling and anima- on packages. 800/343-0073. Lightscape echnologies, Inc., San Jose, Calif.

48. Construction software

LATLAND 5.0 adapts basic AutoCAD to reate architectural construction documents. eatures automated wall, door, and window outines, a standardized AIA-compliant lay- ring system, hundreds of standard rchitectural systems in two-dimensional lock form, and features to help cut through roduction drafting. Includes all standard eel shapes, lumber sizes, bar joists, con- ete plank, and metal expansion-joint ssemblies. 800/247-2031. Ashcraft Architec- ural Computer Graphics, Fort Ann, N. Y.

49. Illustration software

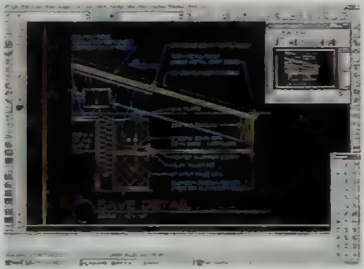
VildTools 2.0, a plug-in for PowerCADD, dds over 125 tools and menu commands. The quiggle command produces rough, sketchy- pe images. The fillet tool will fillet anything anything. Door and window tools offer road options. The scissors, knife, freehand nife, wall trim, trim with object, multi-trim, ne break, and nibble tools cut, trim or xtend objects. Said to bring to Macintosh quipment capabilities previously available nly on other platforms. 910/299-4843. Engi- eered Software, Greensboro, N. C.

150. Graphic tablet

The NewSketch 1212HR is a high resolution, 12- by 12-in. graphic tablet that translates x-y dimensional data into readable format and transfers it to a computer. Resolution up to 2,540 LPI. Compatible with Summagraphics MM series, Migrogrid, Mouse Systems, and Microsoft. Utility programs can improve applications in Windows and DOS. Has four-button puck; a 16-button model is optional. 800/456-7593. Kye International Corp., Ontario, Calif.

151. Inkjet plotters

An inkjet plotter, the TechJET Designer 720c can produce monochrome images at 720- by 720-dpi and color drawings at 360- by 360-dpi on both cut-sheet and roll-feed media; memory can be upgraded to 36 megabytes. Four monochrome plot modes offered. Interchangeable monochrome and color-capable plot head-ink cartridge systems snap in easily. Plotter will work with all popular computers and CAD-system software. D-size: $2,495; E-size: $2,995. Call 800/932-1212. CalComp, Inc., Anaheim, Calif.



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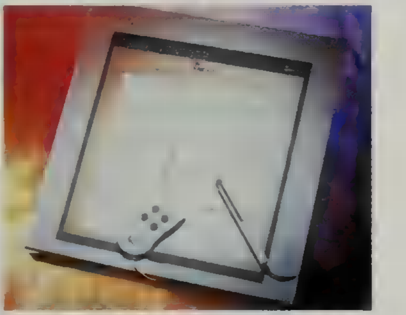

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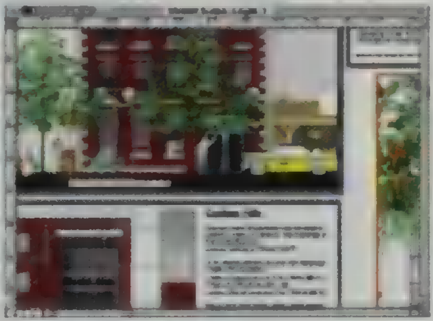

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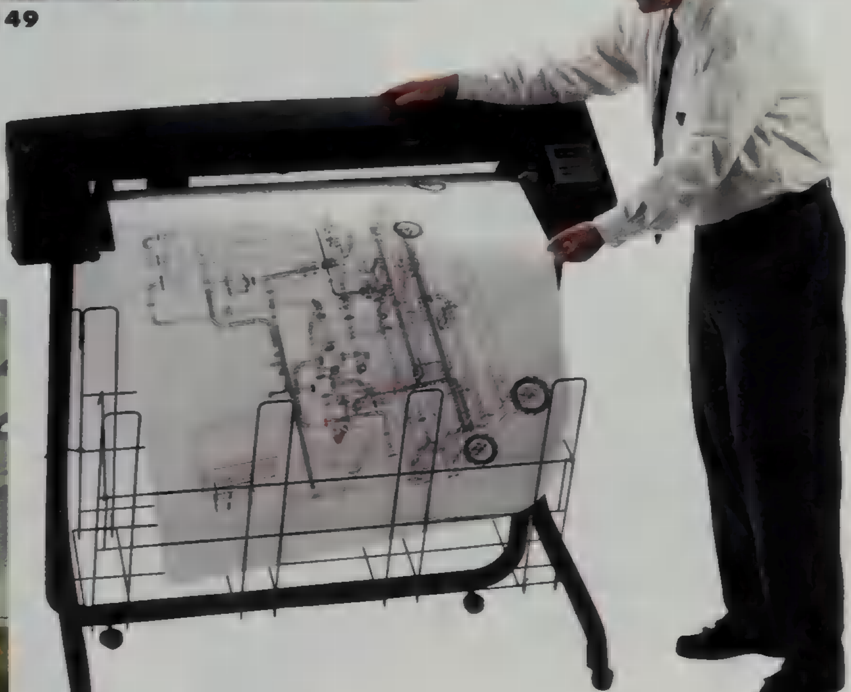

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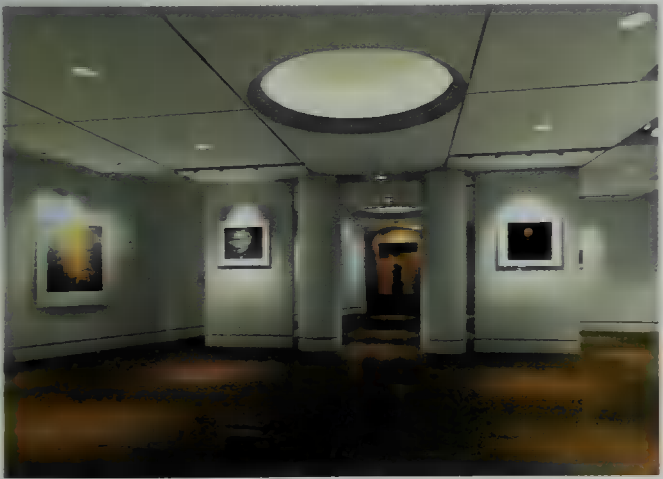

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152. Subtle landscape fixture

The Coronado 720 metal-halide exterior light has a mounting stem with a locking mechanism that makes for easy adjustment and aiming. Versatile mounting options include ground, tree, and other surfaces, and permit up- and downlighting, floor and pathway illumination, and spot and accent lighting. Made of a corrosion-resistant aluminum alloy with stainless-steel hardware; finishes include black, bronze, white, and verde. 818/991-2211. Lumiére Design & Manufacturing, Inc., Westlake Village, Calif.

153. Exterior lighting

The Universe Collection offers four distinct families of fixtures that range from small wall brackets to pedestrian-scaled, pole-mounted luminaires (ALLO 502 is shown), to larger, high-wattage fixtures suitable for streetscapes. All fixtures are made from chromate-primed castings of A356 aluminum that has low copper and iron content to resist corrosion. 714/994-2700. Architectural Area Lighting, La Mirada, Calif.

154. Wright or Mission style

The Prairie luminaire comes in two sizes (roofs either 16- or 24-in. square) for outdoor, post-top mounting. The shade has a stylized tree motif reminiscent of Frank Lloyd Wright designs, particularly when white-acrylic lenses are used. Lamping options include HID and fluorescent sources; photocell control optional. 847/588-3400. Sternberg Vintage Lighting, Niles, Ill.

155. Architectural steel fencing

Omega has expanded its manufacturing capabilities to let it collaborate with designers and customize individual "Eurodesign" fence systems incorporating their unusual mesh pattern. Pictured: an enclosure for a retail store with a custom logo insert. Other applications include pedestrian bridges, bicycle paths, parking garages, sports fields, amusement parks, and medium-security detention centers. Fences designed for durability and low maintenance. 800/836-6342. Omega Fence Systems, Inc., Laval, Que, Canada.

156. Bench seating

Designed to defy vandals and the elements, Gibraltar Series benches also provide comfortable seating. Wire-grid seats made of electropolished stainless or powdercoated steel are 72-in. long to span sculptural concrete support elements. Concrete bench ends and connecting splices may be specified in two shapes and four colors; there are 16 choices of wire colors. 800/451-0410.
Forms + Surfaces, Santa Barbara, Calif.

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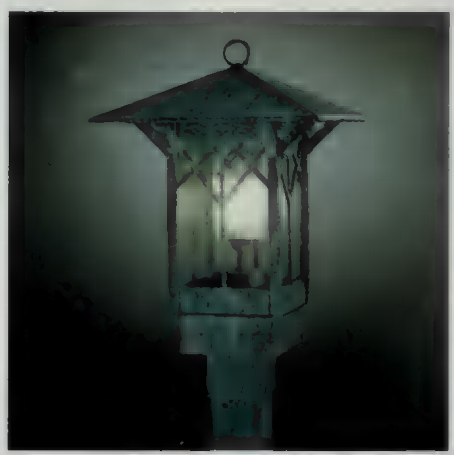

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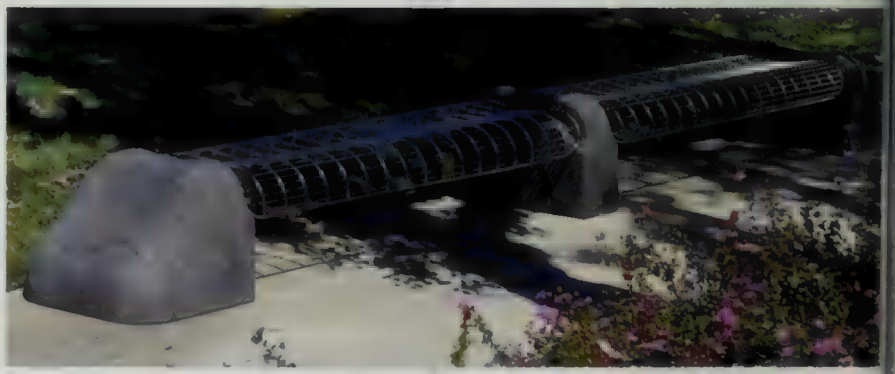

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157. In-pavement lights

)esigned for applications where lighting is ised to mark walkway, patio, and courtyard erimeters, the Fiberscape Paver System is nounted flush with a paving surface. Fixture ieads are fitted to plastic fiber-optic tubing ind illuminated by a remote HID or halogen ight source. No electrical current is needed t the fixture; all equipment is UL listed for vet-location use. 800/327-7877. Fiberstars, nc., Fremont, Calif.

158. Concrete paving

Random Slate is the latest in the Bomanite ine of colored, textured, and imprinted, castn-place architectural concrete paving. The attern consists of angular-shaped stones in ough dimensions of 18 to 36 in. The design f the tooling is said to make it difficult to ind repetition in the imprinted slate pattern. Appropriate for large residential, commerial, and municipal projects. 209/673-2411. Bomanite Corporation, Madera, Calif.

159. Park furniture

Presidio seating and matching litter receptacles are designed to be attractive and durable in unsecured public places. Made with solid-metal rods welded to tubular steel frames, seating may be ordered in any combination of straight or curved units, with or without backs and arms. Litter receptacles are large, 41-gallon units. All pieces are finished in standard Pangard II colors. 800/521-2546. Landscape Forms, Inc., Kalamazoo, Mich.

160. Automatic gate system

The VertiGate makes the best use of tight spaces or hillside sites; it does not need a slide track or room for gate swing or retraction. Powered by 12-volt battery or photovoltaic panels, the barrier lifts up and folds away in nine seconds. Equipment and controls are concealed in masonry pilasters; an electronic safety device stops gate descent when an obstruction is detected. Made of steel and aluminum, gates come in three models for light, medium, and heavy service. 888/428-3787. VertiGate, Fontana, Calif.

161. Interactive fountain

Made by the German firm Kusser Granitwerke, inventors of the Kugel fountain, the Floating Disc Fountain is a granite sculpture with a rounded underside that nestles in a precisely cut base stone. Propelled solely by a low-pressure water source pumped from beneath the sculpture, the Disc floats and spins on a thin film of water. In turn, the slowly spinning disc may support a sculpture of almost any shape or size. 800/919-0800. Red Hogan Enterprises Inc., Tampa, Fla.

162. Exterior lanterns

The Quadro line of exterior lanterns offers multiple housing variations with two sizes. The Quadrolisk has a lattice pole construction. The larger Quadro 1, pictured, is designed to light traffic routes, public spaces, commercial centers, and business parks. Quadro 2, a pedestrian-scaled luminaire, is for single- or double-pole mounting and wall applications. 800/735-8927. Selux Corporation, Highland, N. Y.

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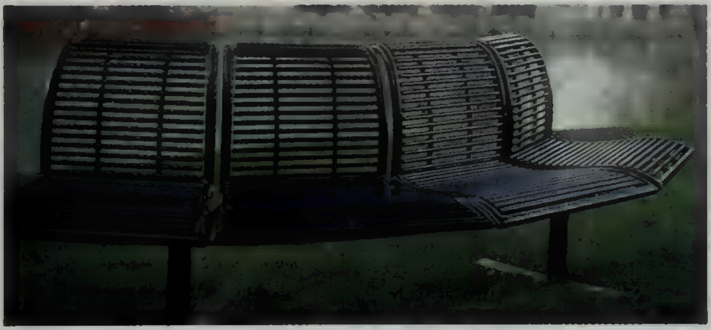

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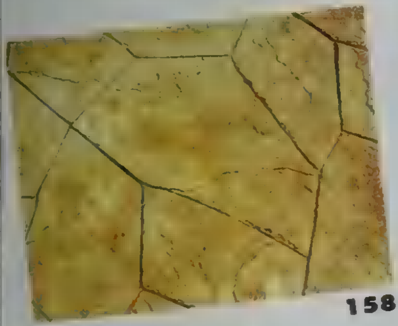

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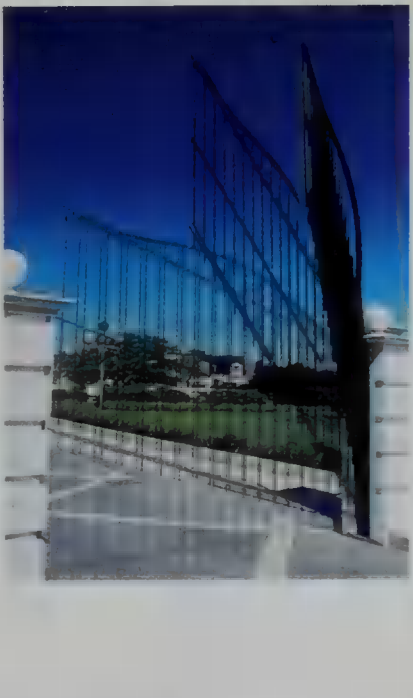

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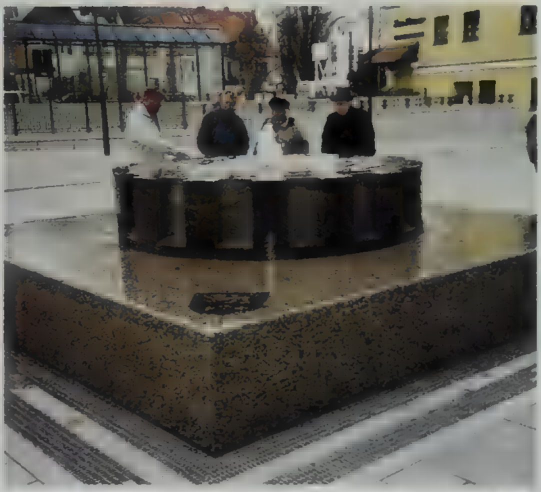

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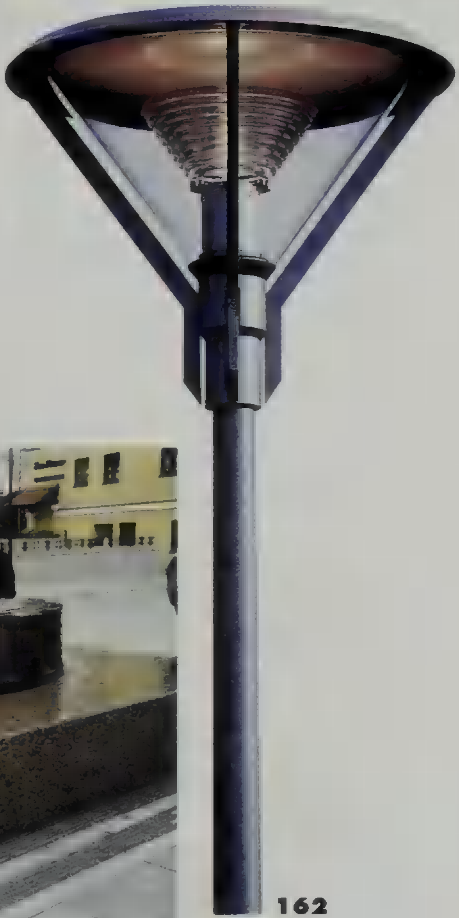

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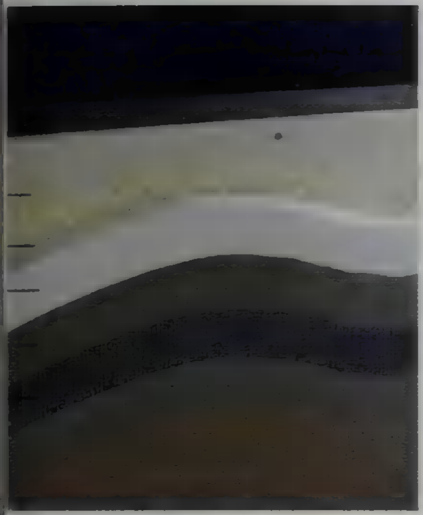
When You Specify EIFS, Specify the Right Dryvit System for Your Project's Needs.



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1969, Dryvit Outsulation has
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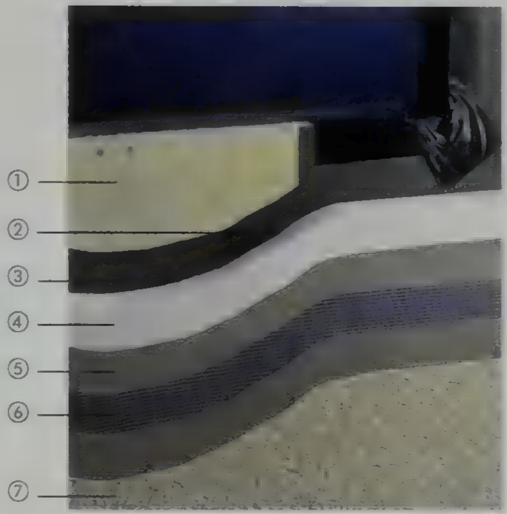
Georgia-Pacific's Dens-Glass® Gold Sheathing or Approved Substrate
Adhesive
Insulation Board
Base Coat
Mesh
Finish



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The High-Performance EIF System with an Air and Moisture Barrier

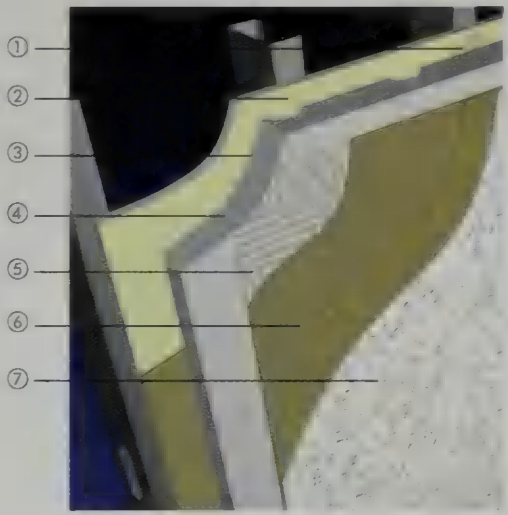
Outsulation Plus builds on Outsulation's proven benefits with Backstop™.

This continuous Type III air barrier and water-resistant membrane protects Georgia-Pacific's Dens-Glass Gold sheathing. Backstop provides a second line of defense against air and moisture while optimizing heating/cooling performance.

Outsulation Plus lets you match the wall to the project while balancing concerns about budget, climatic conditions and design.

Components:

① Georgia-Pacific's Dens-Glass Gold Sheathing Or Approved Substrate
② Continuous Air/Moisture Barrier Including Grid Tape & Flashing Tape
③ Adhesive
④ Insulation Board
⑤ Base Coat
⑥ Mesh
⑦ Finish



INFINITY®

A Pressure-Equalized Cavity Wall with Drainage Channels

The INFINITY System is a multi-layered, patented cavity wall design with pressure-equalization technology. It provides three layers of unparalleled protection.

Inside —
- Dens-Glass Gold sheathing with DryShield® ABA

Cavity —
- A patented cavity wall design with channels to capture and drain incidental moisture out of the system.

Outside — a rainscreen layer
- Dryvit's reinforced flexible base coat and elastomeric textured finish
- Dow Corning silicone building sealants

Components:

① Continuous Air/Moisture Barrier Including Grid Tape & Flashing Tape
② Georgia-Pacific's Dens-Glass Gold Sheathing
③ Adhesive
④ Channeled, Vented Insulation Board
⑤ Mesh
⑥ Base Coat
⑦ Finish

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THE ULTIMATE TEST

Photographer: Peter Leach, Denver, PA

ASTM International Headquarters
West Conshohocken, PA
Diseroad Wolff Kelly Clough Bucher Inc architect
Hatfield, PA

They set the standards. *We* passed the test.

It's quite a statement when the highest authority in the industry utilizes a particular building material for its own purpose. When designing the new ASTM International Headquarters in West Conshohocken, Pennsylvania, the architect specified Lehigh White Cement for the facility's precast concrete panels. Known for its superior quality, durability and versatility, Lehigh White Cement met the challenge.

Precast concrete construction with Lehigh White Cement is aesthetically pleasing–and artistically liberating! Architects can take their artistic expression to new heights, with the freedom to choose from an unlimited range of color, texture, shape, size and pattern to accommodate a multitude of applications. With Lehigh's help, you can turn ideas into reality, and dreams into designs of distinction. From specification to project completion, Lehigh offers you the technical support and service, as well as the finest products available, to ensure you the best results.

Designs of great stature begin by specifying Lehigh White Cement.

The choice for unlimited creativity
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NEW FOR 1997

FOLLANSBEE® *introduces*

2 new environmentally-sensitive roofing metals

each coated with a new
patented alloy that enables
them to withstand severe
corrosive environments
in both marine
and industrial atmospheres

created by a company who has
been producing outstanding
roofing materials for more
than a century.

FOLLANSBEE INTRODUCES

VIROMET®

Coated Architectural Stainless Steel

and

VIROTIN®

Coated Prime Carbon Steel

Each coated with ZT® a two-phase zinc/tin alloy developed to satisfy the most demanding corrosion-resistant expectations, while providing no adverse environmental impact.

VIROMET and VIROTIN, the result of nearly 6 years of intense metallurgical research and development, provide the architect with a two-fold advantage. First, the architect is assured of the traditional and time tested quality and longevity of a Follansbee produced product. Second, there is no need to sacrifice corrosion resistance in exchange for environmental compatibility.

Independent testing conducted by California State University of Berkeley, California, confirmed that there was no red rust formation on ZT-coated stainless after 2400 hours of constant exposure to a 5% salt spray solution. Other metallic alloy coatings commonly perceived to be competitive products produced red rust in less than half that time.

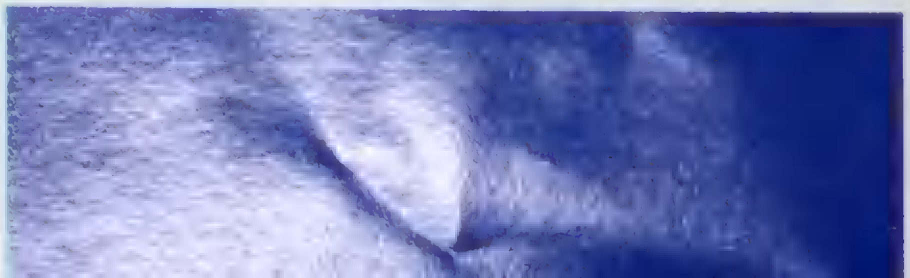
VIROMET and VIROTIN retain all of the inherent mechanical properties of their core metals (304-18/8 stainless steel and prime carbon steel). Solderability, an outstanding characteristic of the Terne alloy, is retained with the ZT-coated products. There is no degradation resulting from UV exposure.

For additional information…

Regarding metallurgical performance contact:
Dr. Mehrooz Zamanzadeh
Regarding CAD-based design assistance contact:
Ed Thomas, VP of Sales

Follansbee conducted exposure tests for over 5 years with over 50 different alloy-based metal combinations in accordance with strict ASTM guidelines prior to selecting VIROMET and VIROTIN as the best performers.

In addition to extensive laboratory testing, Follansbee exposed the above sample to intensive beach-front conditions for more than 5 years at a test site in Topsail, North Carolina.



The new ZT® coating gives VIROMET® and VIROTIN® special characteristics not found in other roofing metals

VIROMET®

unsurpassed performance against the most severe corrosive attack

VIROMET owes its excellent corrosion resistance to the insoluble surface oxide film that forms upon atmospheric exposure. All metallic alloys produce protective surface oxides. The coating factors which determine longevity are solubility, adherence, thickness and rate of reduction. VIROMET has been engineered to excel in all of these critical aspects.

VIROMET is universally functional. It performs exceptionally well in marine atmospheres while offering the architect a dependable corrosion resistant product for use in both rural and industrial environments.

Like Follansbee TCS,® VIROMET does not require painting. VIROMET is designed to weather naturally upon atmospheric exposure. Since VIROMET is suitable for application in a broad spectrum of environments, predictability of color is referred to in earth tone ranges. Typically, VIROMET forms a gray oxide; however, depending upon environmental characteristics, other colors such as whitish gray to light bronze are attractive possibilities.

VIROTIN®

excellent corrosion protection and the choice of color

VIROTIN was developed to mirror all of the time tested qualities of the original Terne (tin) roof used extensively throughout both colonial and modernistic America. VIROTIN also produces the same aesthetic and performance qualities as the original "tin" roofs and thus provides an excellent roofing metal for restoration projects. The ZT coating on VIROTIN provides corrosion resistance, solderability and an excellent affinity for paint.

VIROTIN, like Terne, offers the Architect a wide range of color potentials which contribute to aesthetics and architectural statement. Unlike the glossy, plastic looking coatings applied to modern day metals, the painted surface of VIROTIN replicates the dull oxided and stately appearance of early Americas tin roofs.

About the ZT® alloy...

Developed and patented by Follansbee, the ZT alloy is a two-phase metallic coating of zinc and tin, a combination not previously used on architectural metals. The coating may contain small amounts of other metals to modify its physical properties. However, these secondary components contribute primarily to the strength of the coating and not to its corrosion resistance. The bonding of ZT to both carbon and stainless steel is excellent, forming a tight, durable coating. In testing, Follansbee discovered that, by adding zinc in the amounts of at least 20% of the total alloy, the corrosion resistance of the sheet is significantly increased in chloride-containing environments.

The ZT alloy is anodic under corrosive conditions and inhibits corrosion of any exposed metal near the zinc/tin coating. As a result, minor discontinuities in the coating do not result in the detrimental oxidation of exposed metal.

Follansbee coats both VIROTIN® and VIROMET,® with its new ZT® alloy. While VIROTIN must be painted immediately after installation, VIROMET does not require painting and weathers with exposure to the atmosphere.

VIROMET® and VIROTIN®
are versatile roofing metals

The unique qualities of these new Follansbee roofing metals make them the ideal material for use in hundreds of roof drainage and weathersealing applications and for complete roof systems employing any of the traditional or contemporary architectural metal roof designs. As many architects have with TCS and Terne, they can specify VIROMET and VIROTIN for various vertical wall designs. Specifications for standing and flat lock seam installation are covered in Follansbee's Sweets Catalog. Also appearing in Sweets are guidelines for painting VIROTIN with TERNE-COTE,® the two-coat painting system recommended by Follansbee.

These new roofing metals are strong and ductile, having high yield and tensile strengths as well as workability. They are solderable, providing weathertight joints where required in joints and in flashing around roof perimeters and penetrations.

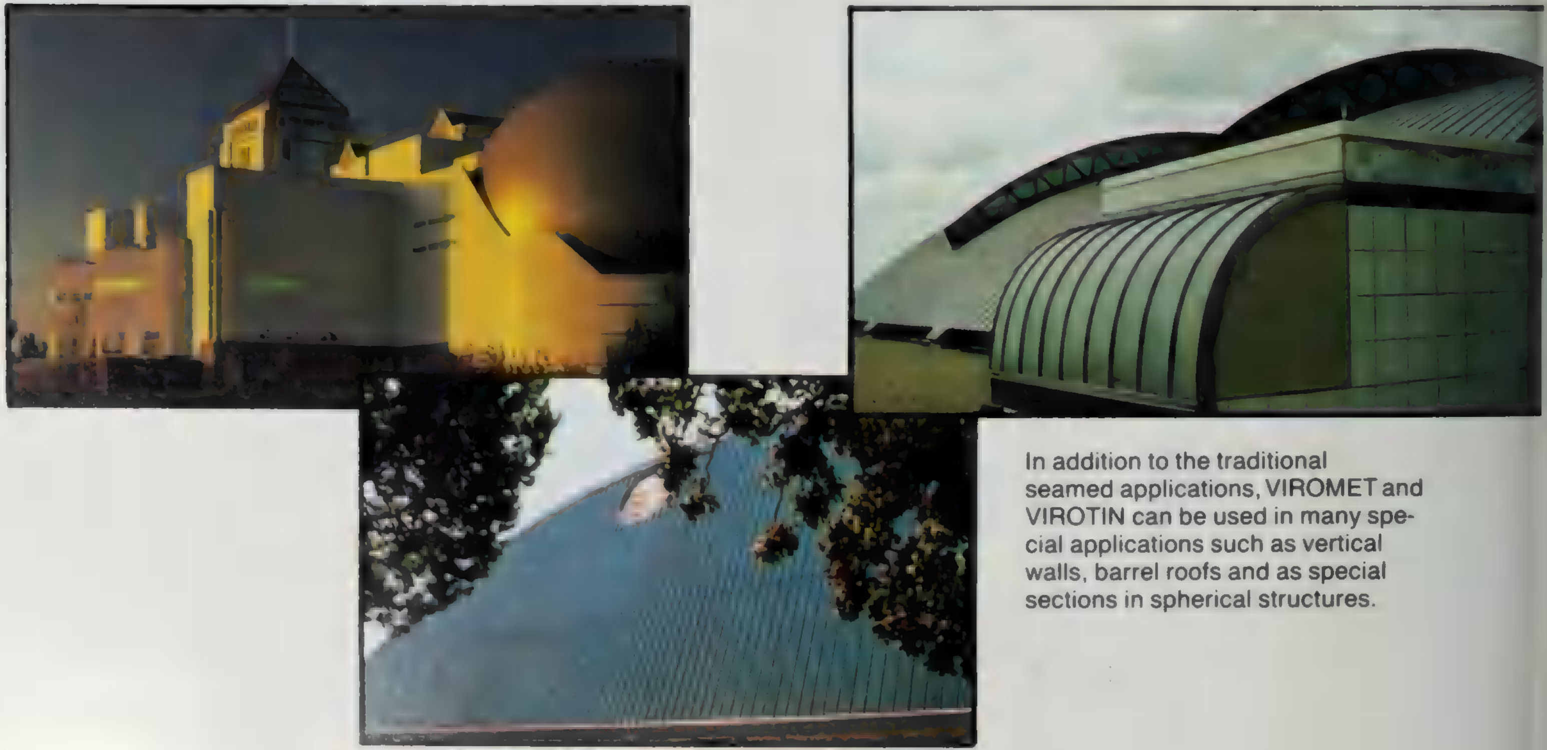
The building owner is thus assured that these critical areas of potential water penetration will remain tight and that joints will not be subject to premature breakdown and delamination as is often the case with sealants.

VIROMET and VIROTIN are available in gages and sizes for all roofing and weathersealing applications. Both metals are also available in many preformed shapes that enable the roofer to cut his application time significantly.

Follansbee engineers and metallurgists will be happy to work with you to help you plan and detail the specifications for the use of these new, spectacular roofing metals. Information relating to materials required, underlayment information, fastening systems, painting specs and flashing details can be obtained by calling us toll-free at 1-800-624-6906.

VIROMET and VIROTIN are available in these preformed accessories:

Solder Strips
Anchor Drip Edges
Stationary and Expansion Cleats
Preformed Valleys
Ridge Caps
Preformed Standing Seam Pans
Various Diameter Gutter and Conductor Pipe



In addition to the traditional seamed applications, VIROMET and VIROTIN can be used in many special applications such as vertical walls, barrel roofs and as special sections in spherical structures.

FOLLANSBEE®

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163. Patterned cover plate

new decorative option for Wabo aluminum xpansion-joint cover plates lets these necesities blend into or complement interior urfaces. Wabografix coatings come in eight tandard patterns which simulate the look of ranite, marble, and terrazzo, with a finish loss that mimics the surrounding surface. Custom patterns may be ordered. Pattern vill resist heavy foot traffic and cleaning. 04/996-6000. Harris Specialty Chemicals, nc., Jacksonville, Fla.

64. FRP structural shapes

tandard Chemshape structural shapes nclude I-beams, wide-flange beams, square nd round tubes, square and round bars, flat heets, channels, angles, concrete embedment angles, toe plates, and threaded rods nd nuts. Thermal and electrical nonconducors, shapes are high in strength and orrosion resistant, and can replace stainless teel in corrosive applications. 800/345-5636. hemgrate Corporation, Woodinville, Wash.

165. Brickwork support

Lintel system conceals steel support for brickwork over flat, curved, or pointed openings. A steel spine spans the opening, and horseshoe plates hang on the spine at every third brick joint. Steel stitching rods inserted through the horseshoe plates and the brick cores tie the brick and the support system together; permits wide spans. 800/323-6896. Halfen Anchoring Systems, Converse, Tex.

166. Mortarless glass block

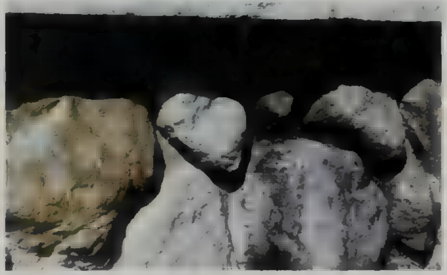
Weck is marketing three extruded-metal BlokUp systems said to speed installation of any size glass-block wall. One permits off-site assembly of window-like panels; another connectable-radius method creates curved block walls. The drawing illustrates a frameless design, with anchor clips that allow for unobstructed installations within an opening. System components include slotted aluminum framing, anchors, and separation strips, as well as silicone sealants. 815/356-8440. Glashaus, Inc., Crystal Lake, Ill.

167. Cast-in-place stone wall

Stone-Crete formwork creates deep-relief "stone" walls using 2- by 6-ft urethane panels mounted on traditional concrete-wall forms. Different rock and stone types (River Rock is shown) can be shaded appropriate colors. Suggested for highway barriers and retention walls as well as residential applications. 800/752-4626. Increte Systems, Inc., Tampa.

168. Posts and columns

A load-bearing steel pipe is at the center of Fypon high-density polymer columns, posts, and balustrades. In classic and contemporary designs for exterior or interior use, columns can support loads up to 12,000 lb. Posts come in three styles, and can be ordered in 8-ft heights, primed and ready for a finish coat. 800/537-5349. Fypon, Stewartstown, Pa.



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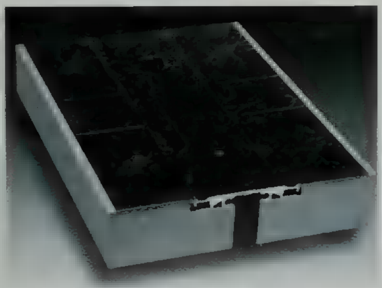

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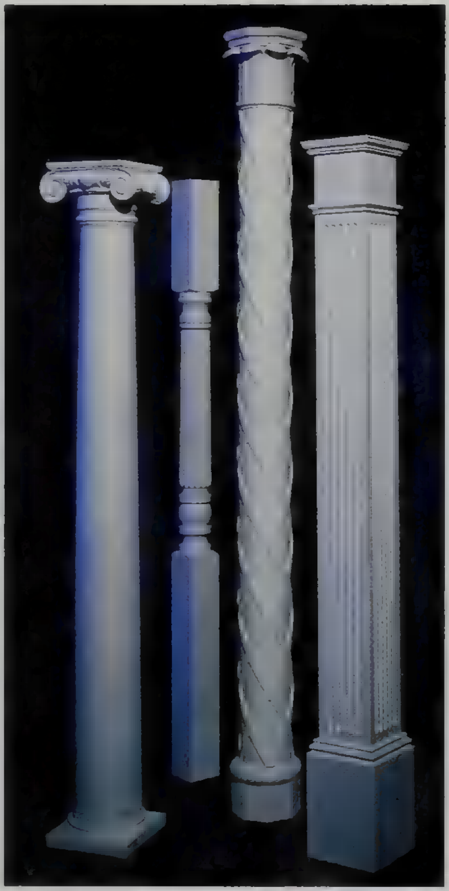

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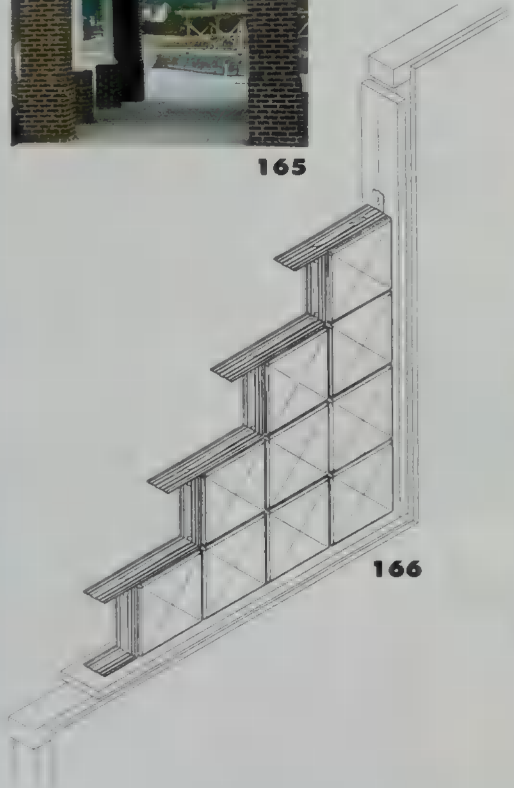

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169. Colorful rail treatment

Brass railings, pedestrian-control standards, and retail and restaurant accessories can be specified with any of 12 very decorative Tattoo designs. Created in-the-round by a unique computer-directed, three-dimensional painting process, the finish is as durable as customary architectural metal finishes. Job-specific designs can be ordered. 800/662-9595. Brass Smith, Inc., Denver.

170. Engineered-wood columns

Made up with glue-laminated wood, Versa-Lam 220 columns are designed to be stronger than conventional lumber at lighter weight. According to the manufacturer, the columns remain straight and true, without twisting, warping, bowing, or cracking. Columns come 48- ft long, in dimensional sizes from 3- 1/2 by 3 1/2 in. to 7 by 7 in. 800/232-0788. Boise Cascade Engineered Wood, Boise, Idaho.

171. Veneered heavy timber

Clear Douglas fir veneers applied to glulam timber produce what appears to be a tight-grain, solid sawn timber. Ideal for decorative roof trusses, arches, beams runs, and columns. Broad range of size and length available. 360/676-5658. The G.R. Plume Company, Bellingham, Wash.

172. Glulam made "simple"

A new structural classification grade has been developed to make specifying glued laminated timbers easier. Termed Grade 24F-1.8E, beams and headers can be produced using Douglas fir, southern pine, Hem-Fir, SPF, and other species. Members have proper camber for floor beam-, roof beam-, and header applications, and fit traditional 2- by 4- and 2- by 6-ft framing. Architectural appearance allows use in both exposed and concealed applications. 206/565-6600. APA—The Engineered Wood Association, Tacoma, Wash.

173. Concrete stain

Lithochrome Chemstain creates permanent variegated or translucent color effects on concrete surfaces. Stains react chemically with surface of concrete, replicating the random shadings of natural stone or the patina of age. Recommended for exterior hardscapes, interior floors and walls, and artificial rock and water features. Chemstain comes premixed and ready to use in antique amber, copper patina, dark walnut, faded terracotta, fern green, and weathered bronze colorations. 800/800-9900. L. M. Scofield Company, Los Angeles.

174. Decorative laminates

For use on countertops, casegoods, and other interior surfaces, Fiber Series plastic laminates are nature-inspired designs influenced by the pronounced textures found on recycled papers and wood pulps. Available in oatmeal, curry, wheat, thyme, and coriander colorations. Sample program offered to design professionals. 800/746-6483. Pionite Decorative Laminates, Auburn, Me.

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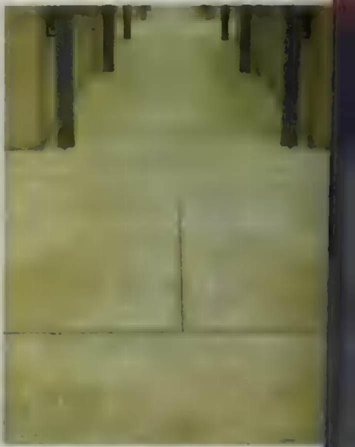
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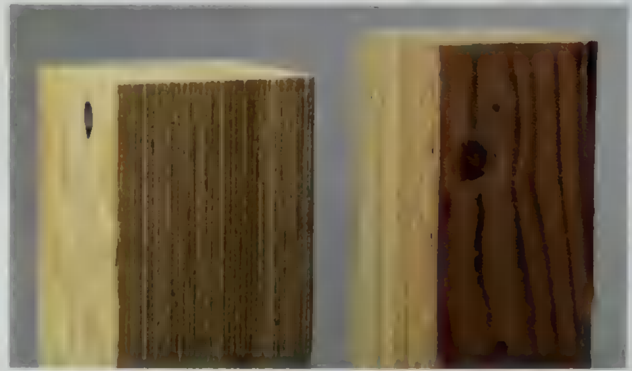
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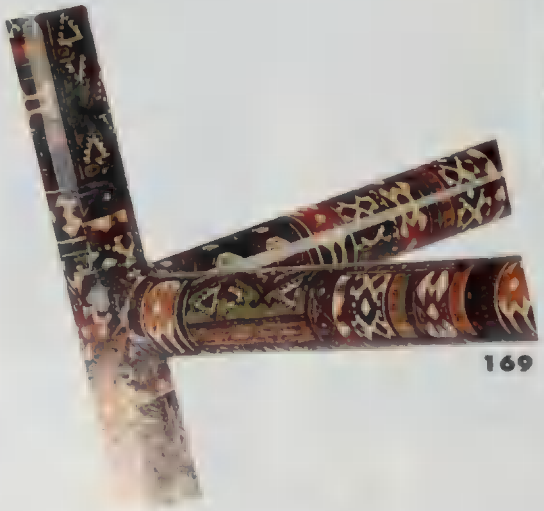
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174

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"Product quality was good with timely delivery and solid engineering support."
Fabricator, Tommy Reeves
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175. FR structural decking

Firestall roof decking is a nailable, UL Class A, fire-rated decking with a face ply of Homasote NCFR. Designed for use as a structural, load-bearing decking in residential and commercial buildings requiring a fire-resistive decking, it can be applied over either steel or wood framing, or a steel deck. Insulation, shingles, or other finish roofing is nailed to the Firestall. Test data available. 800/257-9491. Homasote Co., West Trenton, N.J.

176. Glass-plank stair treads

A prefabricated plank, 91R glass and steel panels have small joints between thin (1- and 1 1/2-in thick) composite-glass pavers that permit maximum flow of light. Units can be used as decklights, stairtreads, skybridges, and translucent, vertical walls. Planks weigh about 24 lb psf, and can support 100 to 150 lb psf. 800/358-3888. Circle Redmont, Inc., Melbourne, Fla.

177. Rim board

An engineered lumber, FiberStrong Rim Board is made in depths suited to finish-floor systems constructed with Georgia-Pacific's Wood I beam joists. Available in depths from 9 1/4 to 16 in. and 1 1/8 in.-thick, boards may be used as both rim board and starter joists, eliminating the need for blocking panels and squash blocks at the ends of I-joists. Edge and end sealing ensures dimensional stability. 800/284-5347. Georgia-Pacific Corp., Atlanta.

178. Birch plywood

Made of Finnish birch and marketed in six bright colors as Fin Color Ply, plywood paneling is now offered with a clear, translucent phenolic finish that allows the natural graining to show through. Finished and smooth on both sides, panels have good chemical and wear resistance, and are suitable for cabinetry, furniture, and interior paneling. 310/396-9991. Finland Color Plywood Corp., Venice, Calif.

179. Composite columns

PolyStone columns and balustrades, made of reinforced polyester resins, are inexpensive and durable. Recommended for pergolas, porches, arbors, and other exterior application near water or in areas of extreme weather conditions, columns are fire, and impact, resistant. Material can replicate the crisp detailing of classic capital styles. 910/763-7600. Chadsworth 1.800-COLUMNS, Historic Wilmington, N. C.

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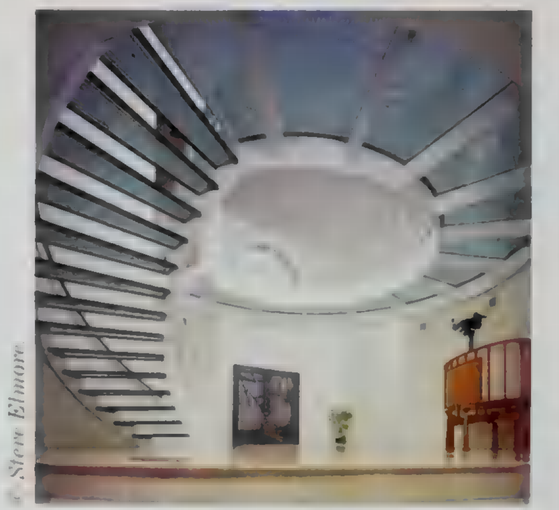

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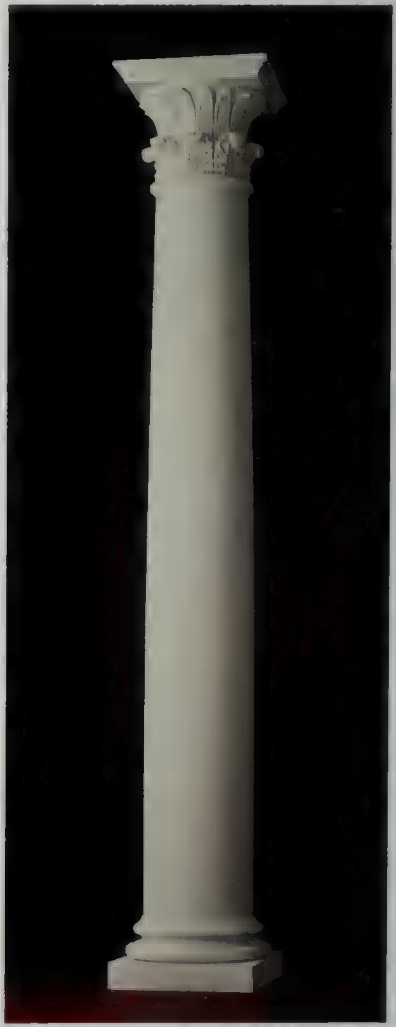

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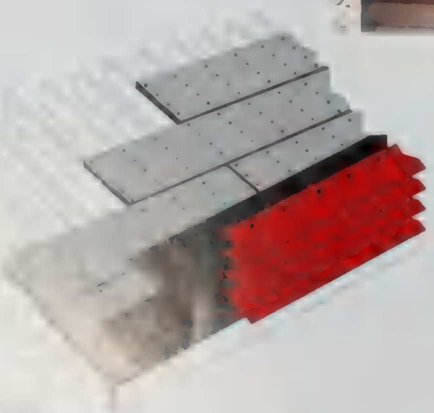
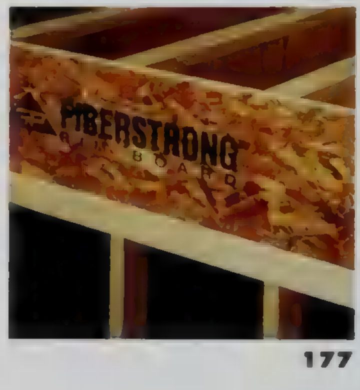




177

Roofing • Cladding Panels • Siding • Insulation Materials • Unit Skylights

180. Egress roof window

Intended for within-reach installations such as attic spaces and lofts, Model GPL roof window is large enough, and opens wide enough—a full 45 degrees—to meet alternative means of egress standards under many codes. Glazing options include heat-strengthened laminated glass; the wood frame comes prefinished with a clear topcoat. Architectural manual offered. 800/283-2831. Velux-America, Inc., Greenwood, S.C.

181. Improved underlayment

Layfast SBS TU 35 is an upgrade on standard #30/#40 roofing felt. Made with more flexible SBS-modified asphalt and reinforced with fiberglass instead of recycled paper, the material is said to improve the long-term waterproof performance of nailable tile, slate, shingles, and other steep-slope roofings. Tested to exceed ASTM D226 for Type II underlayment. Samples: 800/621-9281. MB Technology, Fresno, Calif.

182. Fascia and coping

VersiTrim roof-edge treatments can be specified in aluminum or steel, in a range of architectural finishes to meet exact job performance and appearance requirements. Said o provide maximum wind-uplift protection, some elements have a "non-penetrating" attachment system that eliminates leak points associated with metal fasteners. Line includes ascia, anchor bars, scuppers, and snap-on traight and radius copings. 800/992-7663. Versico, Inc., Akron, Ohio.

183. Exterior trims

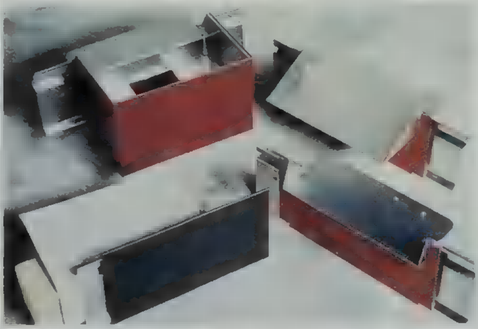
Heartland's matte-finish accessories work with many exterior materials—wood, fiber cement, and hardboard—as well as vinyl siding. The profiles pictured are intended to give a traditional brick-mold look around windows and doors; corner posts come in a new, 20-ft length. 601/728-6261. Heartland Building Products, Memphis, Tenn.

184. Light-weight precast

The Slenderwall panel is said to achieve the strength and rigidity of standard precast concrete panels in a 2-in. thickness. The proprietary panels take up less space in transit; at 28 lbs psf, their lighter weight imposes less load on a structure. Panels are attached to galvanized-steel framework with a "flexible" epoxy-coated connecting anchor designed to compensate for normal building movement and meet current seismic design considerations. Bullnose edges can be cast into the panel itself; face options include aggregate, thin brick, and tile. 540/439-3266. Smith-Midland Corp., Midland, Va.

185. Ceramic-slate roof tile

A fired-clay roofing said to be impervious to moisture and freeze-thaw damage, Celedon Ceramic Slate resembles natural slate. Available in five colorations (Montpelier Green is shown), the interlocking product has the same density as this maker's premium clay roof tile but is lighter in weight and lower in cost. Unit dimensions: 10 7/8 by 16-in. Nominal thickness: 3/4-in. Product manual and installation video are available without charge to architects. 800/699-9988. CertainTeed/Celadon, New Lexington, Ohio.



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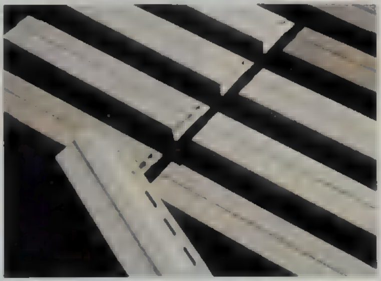

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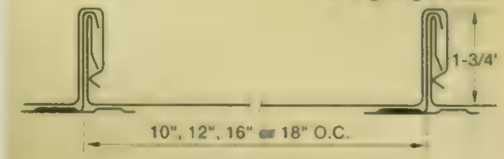

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- [illegible] colors (24 ga. steel)

NEW [illegible] ga. steel)

Dental Offices of Manassas
Architect: Robert Loveless
General Contractor: Rector Construction
Roofing Contractor: GRC Roofing Inc.
Color: Forest Green
Profile: 24 ga. SNAP-CLAD

186. Roofing/cladding metal

Viromet and Virotin are strong, ductile, and weldable architectural metals developed to provide excellent corrosion resistance while meeting specific environmental standards. A stainless steel (Viromet) or carbon steel (Virotin) substrate coated with a proprietary zinc/tin alloy, the new products detail like Terne metal. Viromet will weather untreated to a gray or light bronze color. Virotin is intended to be painted right after installation. Suitable for roofing and cladding, metals are also available preformed as accessories such as cleats and scuppers. 800/624-6906. Follansbee Steel, Follansbee, W.Va.

187. Precast-wall insulation

ITP Building Insulation offers white polypropylene wrapped semi-rigid fiberglass boards with pvc extrusions designed to hold the insulation in place against precast wall panels. With an R-value of 10, the insulation provides both thermal and acoustic benefits; the white face improves light reflectivity for construction workers on already-enclosed floors. 800/654-3103. Schuller Corp., Denver.

188. Ventilation for roof decks

The Iso-Vent combines insulation and shingle substrate ventilation in one product. The polyisocyanurate foam board lays flat against the roof decking; channels in the upper side remain clear under the nailable plywood or OSB roof substrate, carrying air from soffit to ridge vents. 800/343-1285. NRG Barriers, Portland, Me.

189. Radius cedar panels

A new configuration of Number 1 vertical grain Western Red cedar, 4-ft-long siding panels can be used on exterior walls for either inside or outside curves down to a 3-ft radius. Shingles match the texture and buttline of this maker's standard 8-ft multicourse panels. [Residence shown designed by Myrvang Architects.] 800/521-9523. Cedar Valley Shingle Systems, Hollister, Calif.

190. Fiber-cement roof panel

A "moderate price" fiber-cement roofing, 48-in.-long Quantum panels are colored throughout, cast in profiles that mimic cedar shakes and natural slate patterns. Material is described as walkable and wind- and hail-resistant, and has a Class A fire rating; weighs 325 lbs. per square. 800/347-3373. Re-Con Building Products, Sumas, Wash.

191. Low-gloss roofing metal

A new Pac-Clad product, 26-gauge steel panels have a full Kynar 500/Hylar 5000 finish applied in a low gloss/low sheen formulation to minimize the appearance of oil canning. Intended for applications that require a superior in-use esthetic, roofing comes in the Colonial Red pictured, as well as Slate Gray, Forest Green, and Matte Black. 800/323-1960. Petersen Aluminum, Elk Grove Village, Ill.

192. Snow/ice dam

An aluminum guard fastens to the standing seam of metal roofing panels without restricting thermal movement, and can retain up to 2,000 lbs. of unmelted snow and ice. Snow Dams can be ordered to fit any seam type and panel width, painted to match the roof.

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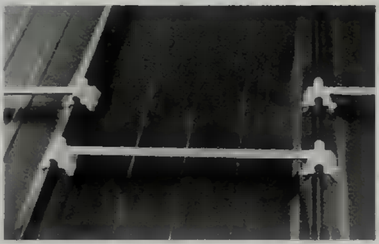

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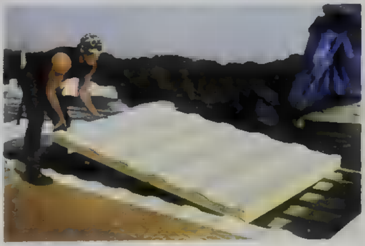

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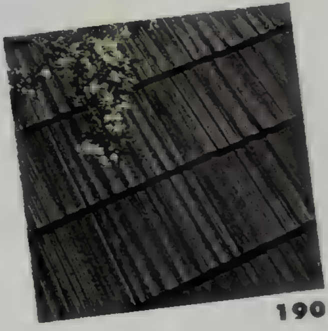

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193. Heavy-duty mortise locks

For upscale offices, stores, condominiums, retail shops, and hotels, the L-Mediterranean extra-heavy-duty lockset has a mechanism of dichromated steel for strength, long wear, and corrosion resistance. Exposed trim is solid brass, in bright brass, Ultima, and bright chrome finishes. Lever options: Merano (shown), Asti, and Avanti. 415/467-1100. Schlage Lock Company, San Francisco.

194. Smoke-control door

The Ceco Smoke Tech system is designed for openings requiring smoke control, such as room-to-corridor, cross-corridor, elevator lobby, pressurized or non-pressurized stair enclosures, and areas of refuge. Doors are made of 18- or 16-gauge rolled steel with UL or WH labels of 20 minutes to three hours. Gaskets (illustrated) are concealed on the tested and rated frames. Sidelites and transoms are available. 615/661-5030. Ceco Door Products, Brentwood, Tenn.

195. Aluminum fire door

Fire-rated doors and sidelites are now available in aluminum, glazed with wireless SuperLite I fire- and safety-rated glass. A 20-minute, 3- by 9-ft door can have a vision light up to 2,422 sq in. Doors accept standard weight hinges, and mortise or cylinder locksets; the bottom rail adjusts. 800/272-7226. Ragland Manufacturing Co., Houston.

196. Acoustical door

For TV and recording studios, product-test facilities, and high-noise reduction applications without space for sound locks, the Dual Mode door provides extremely high sound-transmission loss performance up to STC 64. The 5-in.-thick door weighs 375 lb, operating on cam-lift hinges. 718/931-8000. Industrial Acoustics Company, Inc., Bronx, N. Y.

197. Fire-door safety feature

The M105A annunciator sounds an alarm and lashes a warning signal when an automatic losing overhead-coiling fire-door is about to drop. For use with the M58A-Model G releasing device, the new alarm insures occupant afety when fire doors are being tested, as equired by fire codes. The device may be ctivated by smoke or heat detectors, fire larms, or other signals. 800/233-8366. Cornell Iron Works, Inc., Mountaintop, Pa.

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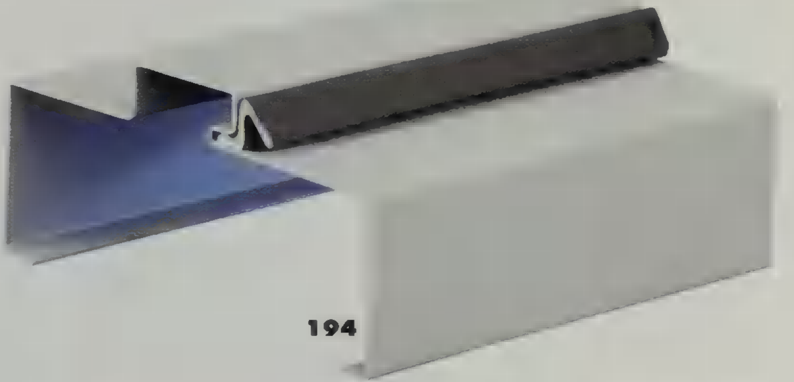

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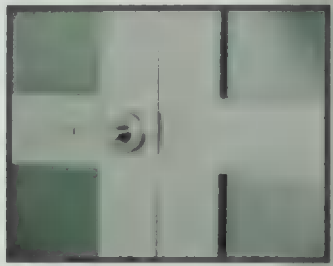

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he inside, a standard lock and deadbolt are
ctivated by a push of the button; on the
utside, a single key unlocks both latches at
nce. The lock has an adjustable chassis to fit
ifferent lock/deadbolt placements. Meets
DA accessibility requirements. 414/444-
800. Master Lock Company, Milwaukee.

199. Fire and smoke seals

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nescent, fire-door gasketing expands evenly
n all directions on exposure to heat, filling
ven the smallest spaces and blocking flames,
moke, and toxic gases. Controlled expansion
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or escape, expansion continues when the
oor is closed again. The material can be mor-
ised directly into door edges and/or frames,
r designed into gasketing systems for new or
etrofit applications. 800/635-5335. Zero
nternational, Bronx, N. Y.

00. Interior door core

new residential option, the CraftCore door
as a wood-fiber core; though lighter than
onventional particle board, it is said to repli-
ate the heft, sound-deadening properties,
nd easy-swing features of a solid-pine door.
00/446-1694. CraftMaster, Chicago.

01. Fire-rated doors

eyerhaeuser says it offers the first 90-
inute, fire-rated doors that eliminate metal
dges at the meeting stiles and conceal the
ertical rod, letting architects match fire-
ated doors to the appearance of other doors
n a floor. Incorporating Yale's 7140 WCD
xit device, pairs are available with fire
atings of 20-, 45-, 60-, and 90- minutes.
00/869-3667. Weyerhaeuser Door Division,
arshfield, Wis.

02. Fire-rated floor access

he Type FR floor door, tested and approved
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STM E119, preserves the fire rating of a
oor system by containing flames and limit-
g heat transmission to upper floors for two
urs. A recessed cover will accept various
ooring materials, letting the door blend with
surroundings. 203/934-6363. The Bilco
mpany, New Haven, Conn.

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203. Privacy glass

Now commercially available for interior or xterior use, privacy glass changes from rosted to clear at the flip of a switch. A film of lectrically sensitive liquid crystals between heets of glass is wired to standard current. Switch on: crystals line up and create a clear glass. Off: crystals return to a random, naligned state, and the glass appears rosted. Glazing comes green, gray, bronze, or lear. 507/451-9555. Viracon, Owatonna, Minn.

204. Operable storefront

From Germany, the Solarlux SL50 aluminum system can create a complete storefront with olding doors, windows, matching entrance doors, transoms, and sidelights. Units are available opening either inward or outward; heights to 9 ft are possible. Maker says that air- and water-infiltration and security-performance criteria meet applicable codes; the lush sill is designed for wheelchair access. Powder-coat colors, anodized finishes, and divided-light styles are offered. 800/873-5673. Nana Wall Systems, Inc., Mill Valley, Calif.

205. Folding glass wall

Aluminum-framed Mirage installations ppear to be a progression of windows, yet he wall opens easily, accordion style, to give a 2-percent unobstructed opening to outdoors. or use enclosing porches, balconies, swimming pools, restaurants, and storefronts, here are 14 sizes, in widths to 20 ft. 800/447-938. Skytech Systems, Bloomsburg, Pa.

206. Super-insulating unit

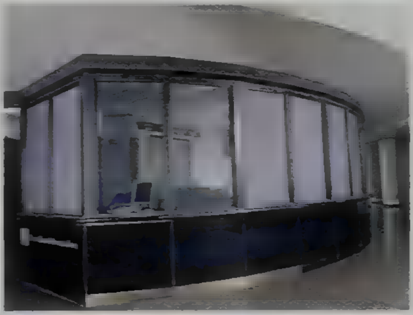
new option comes pre-glazed in an insulatd aluminum frame. Less expensive than xisting four-element high-performance lass, the three-part design (two glass lights ith a suspended clear spectrally selective lm) offers R-Values up to R5. 403/451-4000. isionwall Technologies, Edmonton, Alberta.

207. Slide-aside entrance

One of several "Phantom Wall" configurations, the PW-90 exterior mall slider permits occasional passage of large objects through a pedestrian entrance. Useful for casinos, shopping malls, automobile showrooms, restaurants, and other retail applications, the entire glazed area slides to the side for easy access for deliveries. 214/551-6162. Vistawall Architectural Products, Terrell, Tex.

208. Gasketed curtain wall

Developed in England, EFCO's Series 5800 Don Reynolds assembly incorporates the structure of a conventional curtain wall or sloped-glazing system while offering a unique gasketed face. The gaskets, available in a wide range of colors and profiles, add a design element to their weatherproofing function. Series 5800 can be used in many different applications, including punched or ribbon openings and slope glazing. 800/221-4169. EFCO Corporation, Monett, Mo.



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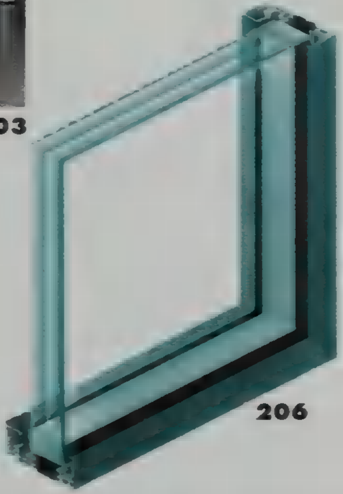

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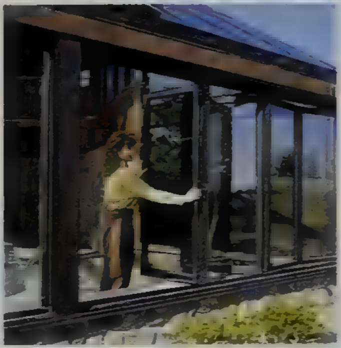

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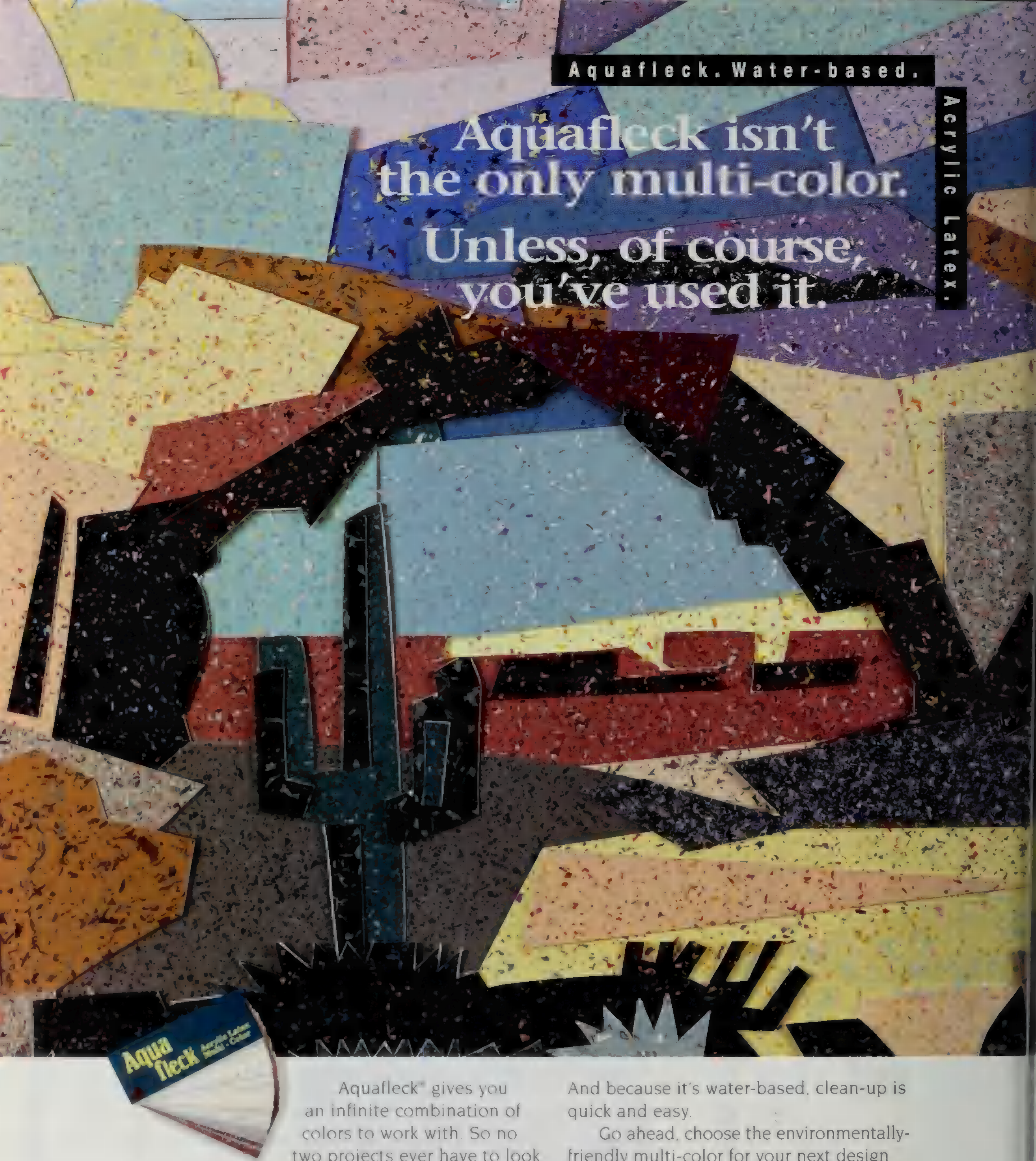
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Finishes

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209. Free-formed ceiling

Described as a non-modular solution for smooth, flowing runs of gently curved or undulating ceilings, the Aluma-Vault comes in a range of panel configurations, colors, and finish options. The architect needs only to specify a radius for the curves, and quarter-vaults, domes, barrel vaults, and wave-like shapes are made to fit. Panels come in sizes of up to 4- by 10-ft; may be backed with sound-absorbing material. 800/747-8954. Gordon, Inc., Shreveport, La.

210. FRG moldings/light coves

Made of fireproof, fiberglass-reinforced gypsum, cornice and cove moldings are available in 10 sculptured patterns that coordinate with USG acoustical ceiling panels. Moldings come in 8-ft lengths, in a choice of smooth white or any of 24 standard colors. 800/950-3839. USG Interiors, Chicago.

211. Healthcare floor

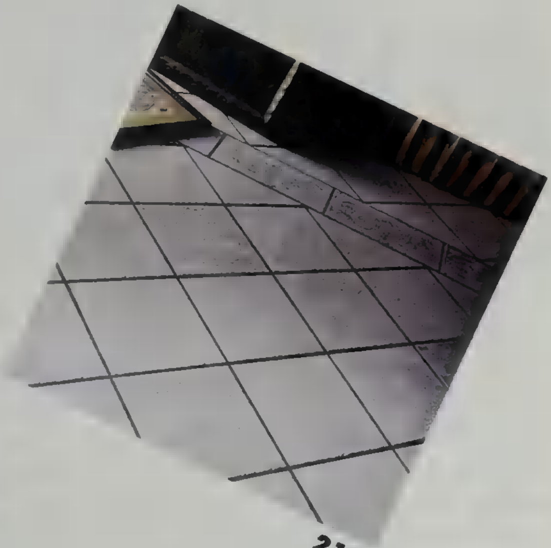
BioSpec is a new, homogeneous sheet-vinyl floor developed specifically for the stain- (and germ) resistance appropriate to hospital operating theaters, clean rooms, and other demanding applications. Heat-welding or chemical sealing creates a seamless floor. Available in 30 colors, including low-contrast patterns that call attention to dropped objects. Sample chip program: 609/339-5941. Mannington Commercial, Salem, N.J.

212. Medieval esthetic

A time-worn look from Cisa Ceramiche, Le Rocche floor tiles are made in a blend of soft gray and ochre colorations, with distressed edges and mottled effects. Suitable for heavy-traffic floors, the Italian tiles come in four field-tile shapes, both plain colors or with a subtle 13th-century decoration, as well as more-boldly colored insets and corners. For U.S. sources: 212/980-1500. The Italian Tile Center, New York City.

213. "Marble" ceramics

A new floor tile for residential and light-commercial use, Marble Classics is said to closely replicate the veining and shading of natural, polished marble. Tile is made in 12- and 16-in. squares, 4- by 12-in. insets, and a coordinating, rectangular wall tile. Sample boards show all five colorways. 800/496-TILE. Interceramic, USA, Garland, Tex.



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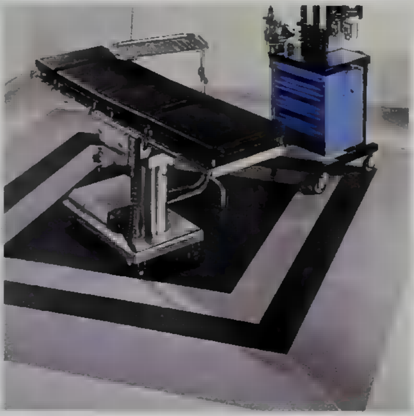

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214. Customized rubber floor

Determined to add more value and decorative options to their line of institutional flooring and accessories, Johnsonite now offers architects and interior designers the opportunity to create project-specific colorways in marble-pattern rubber tiles and stair coverings. The Prima customized floor lets the specifier choose a single background color, plus up to three additional integrated "veining" colors from a total of 29 colors. These colors are picked up as solid-tone accent tile, wall base, transitions, corner guards, and other trim. 800/899-8916. Johnsonite, Chagrin Falls, Ohio.

215. Laminate flooring

Anticipating substantial growth in laminate flooring products, Formica Corporation is placing its trademark on a line of 25 patterns created specifically for the American market. Unlike European styles, Formica's floor will have longer plank lengths and a matte, not glossy, finish. Pictured are sandstone and wood-grain designs from the initial flooring collection, intended for residential and light-commercial spaces. Tongue-and-groove laminate strips glued to each other, and installed as a "floating" floor over any level subfloor. Moisture- and heat-resistant, laminate is suitable for kitchen and bath spaces as well as other residential interiors. Samples: 800/FORMICA. Formica Corp., Cincinnati.

216. Water-based multicolors

Both Polomyx and Zolotone multicolor paint systems are now available in an environmentally benign, low-VOC formulation said to be as durable and colorful as the solvent-based product. 800/773-1667. Surface Protection Industries International, North Billerica, Mass.

217. Low-odor semi-gloss

A minimal-odor enamel rugged enough for institutional settings, HealthSpec is said to reduce maintenance costs by permitting painting during normal business hours, with no need to evacuate building sections, even in hospitals. Available as both egg-shell and semi-gloss enamels, HealthSpec should give one-coat coverage on walls, trim, doors, railings, and cabinets in healthcare, school, and other heavy-use, occupied environments. The Sherwin-Williams Company, Cleveland.

218. Long-span metal ceiling

A new ceiling-panel option, Luxalon comes in lengths up to 19 ft, providing a sleeker, uninterrupted appearance to longer spans. Individual planks are wider, with a choice of a beveled- or reveal-edge treatment. Luxalon ceilings come in any of over 50 colors, and permit four suspension configurations (carrier, lay-on, clip-in, and wide C-grid). Ceilings are said to improve the acoustic performance of airports, retail malls, and lobby spaces; installation system will accommodate lighting-fixture and sprinkler-head requirements. 800/366-4327. Hunter Douglas Architectural Products, Inc., Duluth, Ga.

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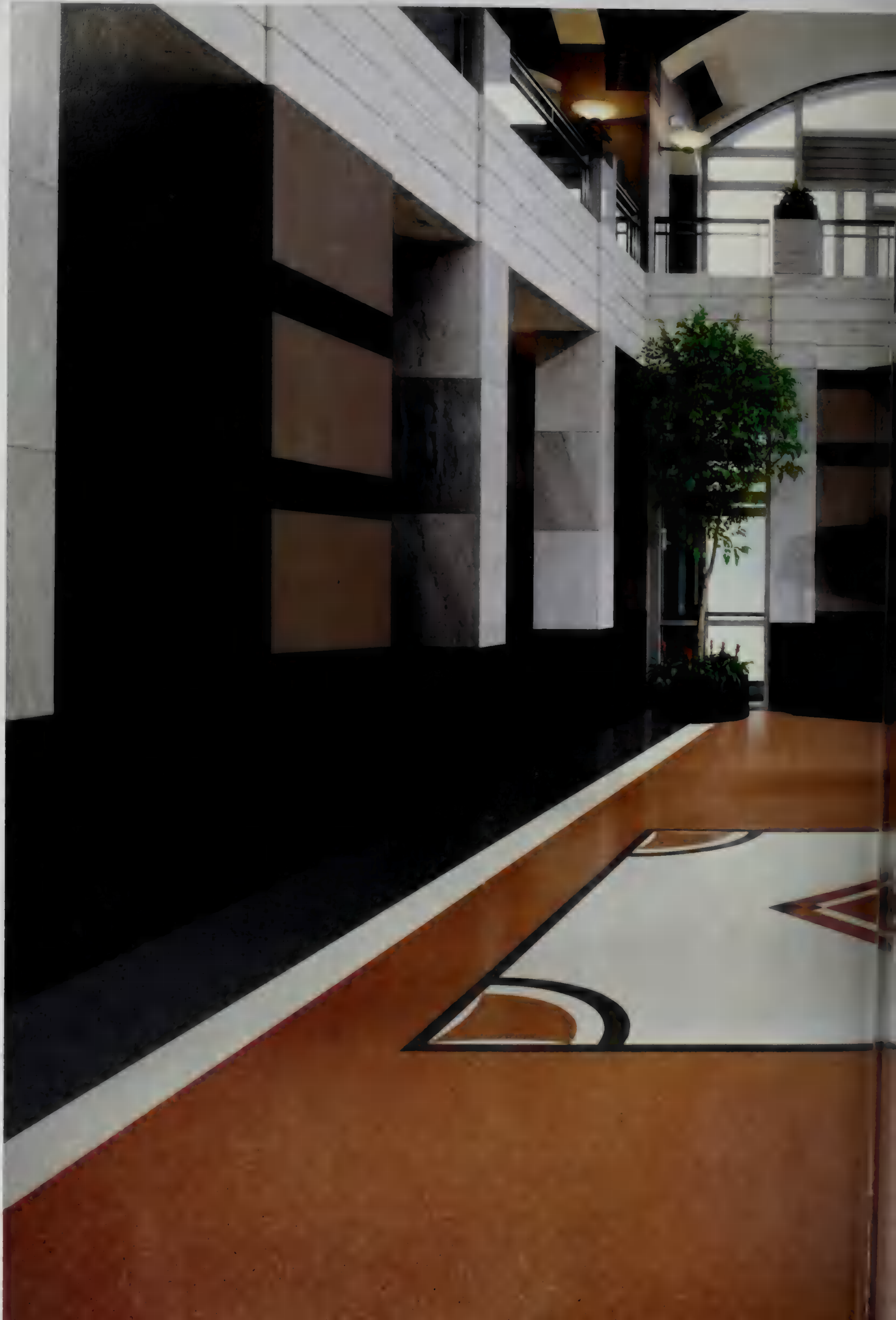
When an extraordinary space
requires extraordinary options,
it must be Mannington.



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Broadloom Carpet

Mannington Commercial broadloom carpet offers you more colors, more patterns, more textures and more uses, all with fewer seams. And if we don't already make exactly what you're looking for, custom capabilities are available, so it's perfect for almost any project.

Homogeneous Sheet Vinyl

BioSpec™ homogeneous sheet vinyl can even withstand the rigorous demands of health care applications. Heat- or chemically-weldable for seams that are impervious to germs or moisture. Extremely resistant to cracking and delamination, even under heavy, rolling loads. And no other sheet vinyl resists staining better.

Six-foot Vinyl Backed Carpet

The perfect carpeting for healthcare and institutional applications. Six-foot vinyl backed carpet is the only soft surface flooring with chemically-weldable seams, making it impervious to moisture.

Inlaid Sheet Vinyl

Random Fields® gives you a granular texture in neutral, earth tones. Fine Fields® offers a more refined pattern in rich, saturated shades. Inspired Fields® is our premium inlaid sheet vinyl option featuring multi-color flecks in bolder tones.

Sheet Vinyl

CustomSpec II™ lets you create with a palette of sophisticated patterns and colors. And its 12′ width allows an installation with fewer seams for a more integrated appearance.

Modular Carpet Tile

Mix colors, patterns and textures for unique design treatments. Modular carpet tile provides the ultimate in flexibility. Damaged or soiled tiles are easily replaced. And the modular design allows easy access to electrical, telephone and computer raceways in open office layouts.

Vinyl Composition Tile

Make bold design statements with squares of vivid color. Essentials™ and Inspirations™ vinyl composition tile gives you the widest spectrum of contemporary colors, all with through pattern construction for lasting beauty.

With so many flooring options from Mannington Commercial, your designs are only limited by your imagination. To get the information you need to specify Mannington Commercial for your next project, call 1-800-241-2262.

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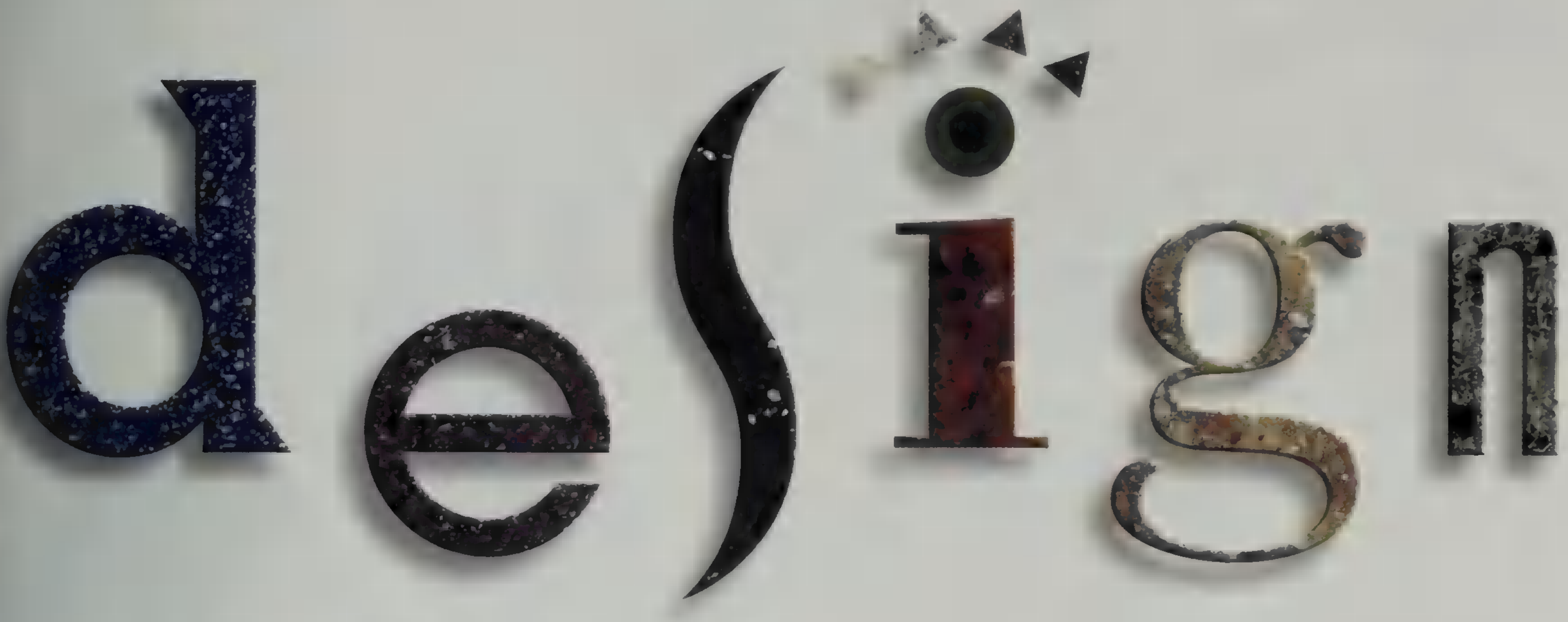

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219. Tufted-pattern broadloom

The textured-loop pattern used for Lees' Bottega carpeting was made using their proprietary, full-repeat-scroll tufting equipment, a technology said to create carpeting with combinations of pattern, color, and texture not possible before. Constructed with 30-oz, yarn-dyed Antron nylon, Bottega broadloom comes with Unibond moisture-resistant backing. Bottega offers 21 running-line colors, in 12-ft widths for office, retail, and other commercial applications. 800/523-5647. Lees, A Division of Burlington Industries, Inc., Greensboro, N.C.

220. Architectural coating

Described as a "second generation" fluorocarbon, Megaflon is a chemical-cure, high-performance coating for aluminum, steel, concrete, glass, and plastic—including older fluorocarbon surfaces. Offered in both coil-coat (baked-on) and ambient-temperature formulations for site application, finish comes in bright, vivid colors and a range of glosses. Said to maintain color intensity and gloss levels for decades, Megaflon meets AAMA 605.2. 860/274-5857. Keeler & Long, Watertown, Conn.

221. Acrylic-latex finish

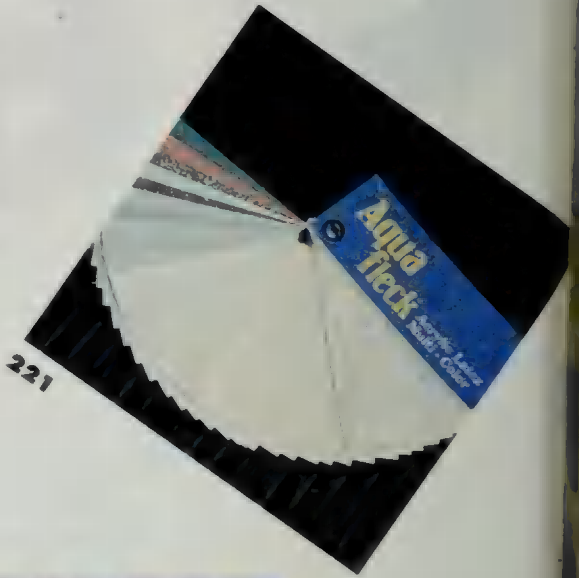
A water-based, VOC-compliant multicolor finish for heavy-use commercial and institutional interiors, Aquafleck offers dozens of colorways incorporating distinctive pigment flecks that give the finish a three-dimensional, textured appearance. Wall treatment is "virtually odorless" and quick drying for application without disrupting occupants. Swatch cards: 800/225-1141. California Products Corp., Cambridge, Mass.

222. Three-dimensional ceiling

A standardized approach to creating custom suspended ceilings, the Curvatura system consists of 36 grid segments that can be combined in "an infinite" number of designs. The spaces between the curved grids are filled with flexible panels in perforated or plain metal, woven wire mesh, or translucent fiberglass-reinforced plastic, conformed to the grid with hold-down tabs. A design kit provides templates, component manuals, and computer software to help the architect and interior designer create custom ceilings. 800/950-[illegible]. USG Interiors, Chicago.

223. Laminate planks and tiles

A decorative, durable flooring for kitchens, home offices, and other heavy-use residential spaces, Wilsonart laminate comes in patterns and shapes said to demonstrate the design flexibility of the product. As an essentially photographic process, high-pressure laminate can replicate the appearance of natural materials such as maple, cherry, and oak wood, or the colorations and veining of marble, granite, and terrazzo. These designs can be enhanced and abstracted to create looks unattainable with other materials. Wilsonart offers laminate flooring in plank and tile formats, with interlocking edges for floating-floor installation. 800/433-3222. Wilsonart International, Temple, Tex.



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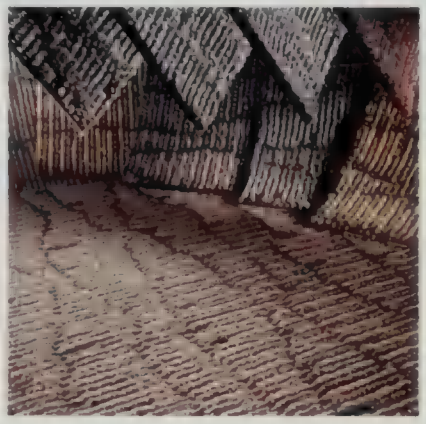

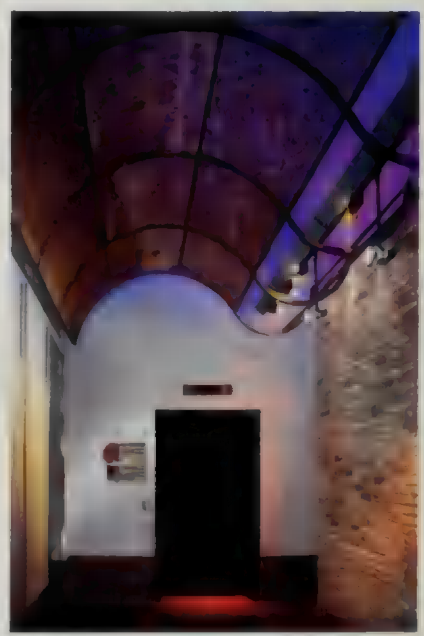

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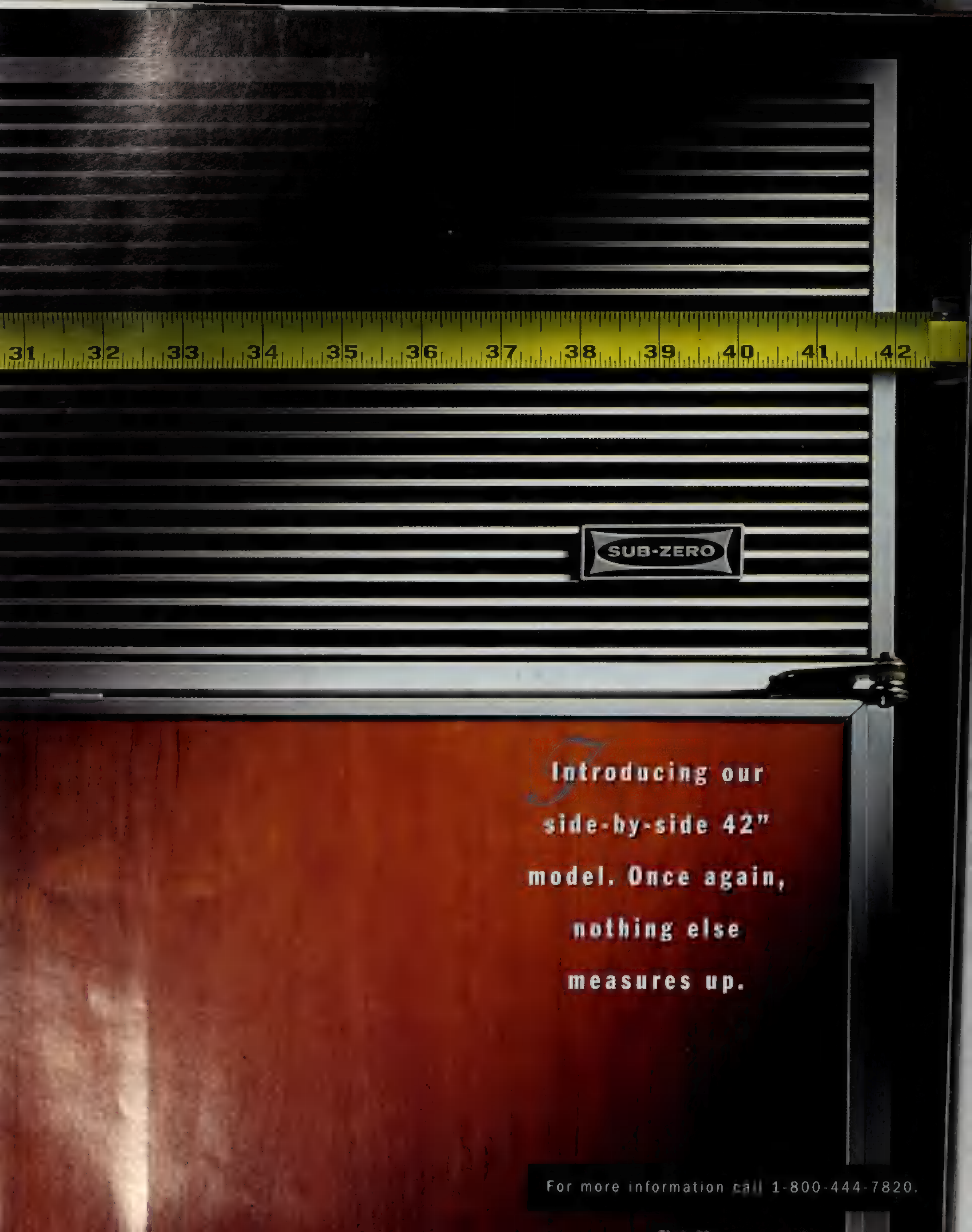
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224. Recyclables collection

escribed as a cost-effective, multi-container ecycling system, The Hi-Rise replaces obso-ete trash compactors in mid- and high-rise uildings, and can be installed in new build-ngs. It automatically compacts up to 900 lbs f trash, and adapts to future sorting require-nents. The user pushes the button keyed to he material being discarded—plastic, glass, aper, garbage—and the basement turntable evolves to receive it. 305/624-9222. Hi-Rise Recycling Systems, Inc., Miami.

225. Multi-function walls

omplex design and performance criteria—eavy-weight shelving, plumbing runs, and ower distribution—were incorporated into win Wall partitions used in a biomedical lab-ratory (Nottingham Architects). The wall ystem was able to accommodate custom ele-nents such as windows and impermeable vall/floor joints within a flexible partition that ermits ready reconfiguration. 800/990-9255. owcraft Corp., Falconer, N.Y.

226. Concealed vaults

These vaults are not only secure—they are hidden. Using a proprietary opening mechanism, which makes the safes virtually invisible, burglar-proof enclosures the size of walk-in closets—up to 11 by 14 ft— can be concealed within a home. The firm's motto: If they can't find it, they can't steal it. Installed prices depend on size of safe and location of project, but might be $15,000 for a 4- by 4- by 8-ft vault. 901/685-1500. Custom Security, Memphis, Tenn.

227. Life-safety package

The Life Safety Net 2000 is an all-in-one fire-protection, security, and hvac-control package. The digital electronic technology used is said to make the control and signal cabinet easy to install and customize, and to reduce its in-place costs in most types of buildings. Meets all appropriate codes, including the New York City Fire Department's. 718/899-6100. Firecom, Inc., Woodside, N.Y.

228. Ceiling-hung partition

Skyfold is an automatic, vertically folding acoustical partition that stores in the ceiling. Individual rigid panels are independent of the motorized pantograph, weigh only about 50 lbs, and can be replaced if damaged. Loading is evenly distributed, and needs no special structure. The system achieves an STC rating of 48 without floor track or seals. Installation pictured by Rounthwaite, Dick & Hadley, Architects. 514/457-4767. Skyfold Div., Railtech Ltd., Baie d'Urfé, Que., Canada.

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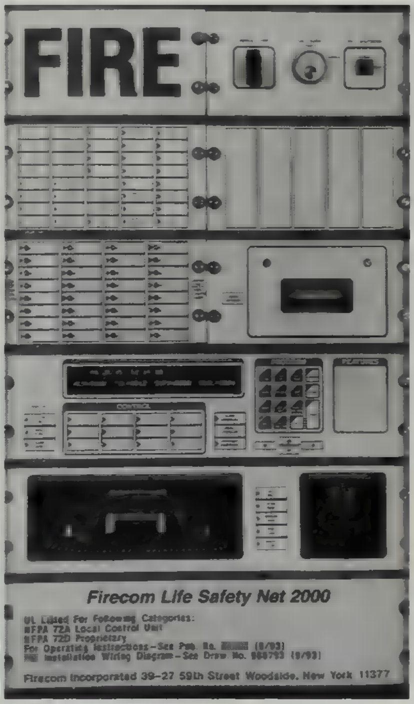
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Firecom Life Safety Net 2000
Firecom Incorporated 39-27 59th Street Woodside, New York 11377

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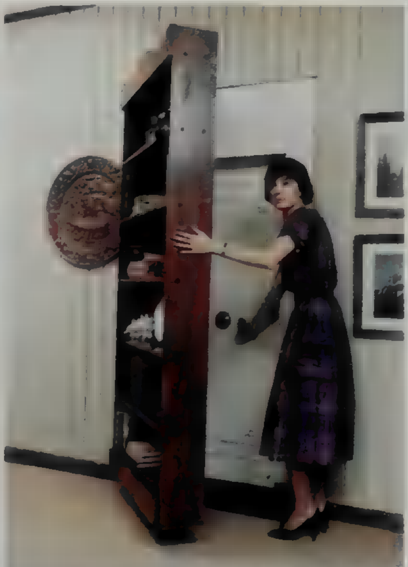

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29. Merchandising display

esigned for in-store display walls and iosks, System A is based on a recessed arrier which holds the merchandise racks in lace by a simple push fit. No twisting or urning is necessary to keep the display traight and level. Distinctive shelf elements nd hooks are designed for clothes, hanging ems, sports equipment, and shoes. 910/889-322. Häfele America Co., Archdale, N.C.

30. No more turn crank

new control option for high-density mobile torage systems like those used in libraries nd back-office facilities, Power Assist is perated by a DC motor. The device is said to ffer fully automated, easy-to-direct electro-echanical operation and safety features at a rice comparable to mechanical-assist storage ystems. 800/492-3434. Spacesaver Corp., 'ort Atkinson, Wis.

231. Double-bent shower

The Neo Solution is described as a stock solution to a custom-surround design problem. Tempered-glass door has a 27-in.-wide clear opening, yet fits into a standard 42-in. angled-corner base. Glass-to-glass hinges and "invisible" vinyl profiles are said to give a floating, all-glass effect. 800/348-8080. Duschqueen, Inc., Wyckoff, N.J.

232. Recognition displays

Donor acknowledgement plaques and memorial walls can be designed with micro V-cut lettering in crystal clear glass. Wallach etching and glass-cutting techniques permit a dramatic, legible display in materials appropriate to the site. A new donor wall mounting system holds interchangeable, stacking blades of V-cut glass sandwiched between two sheets of crystal, and is said to be easy to update and revise. 707/527-1205. The Wallach Glass Studio, Santa Rosa, Calif.

233. High-design cabinetry

Designed by Ferrari stylist Pininfarina and incorporating automotive techniques such as mold-injected polyfoam parts, Snaidero's Ola kitchen features an integral stainless-steel cooktop (by Franke) and built-in lighting. Cabinetry comes in bright lacquer colors like Racing Red, Solar Yellow, and Northern Sea Blue (pictured). 310/516-8499. Snaidero, Los Angeles.

234. Restroom accessories

Made in 13 colors of Hewi's dense nylon material, new 485 accessories have a canted base for mounting on walls and partitions. Items such as soap dispensers are designed for one-hand operation. 717/293-1313. Hewi, Inc., Lancaster, Pa.

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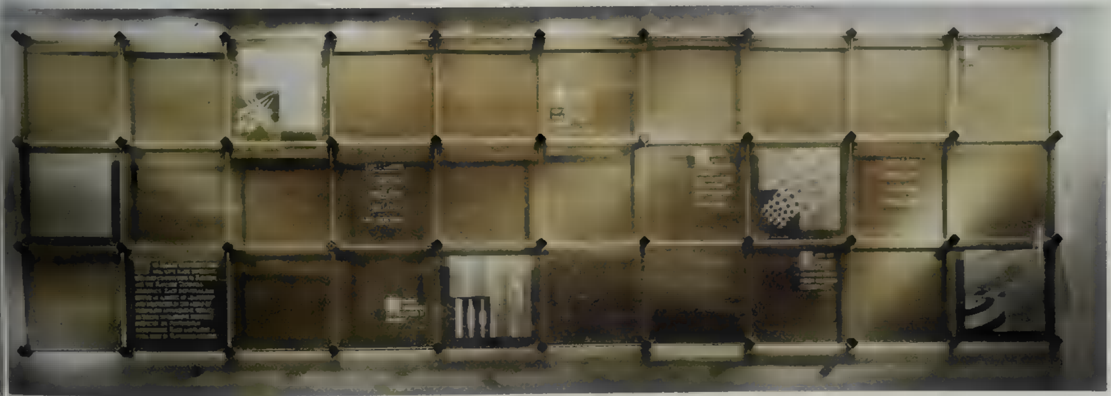

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Furnishings

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235. Pull-up chair

Brian Kane designed this rugged stacking chair specifically to take advantage of Xorel fabric's response to heat: He was able to "shrink-wrap" the upholstery over the molded-urethane shell. Intended for abuse-prone settings, including restaurants, the chair has a cold-rolled steel base. The fabric itself is flame-retardant, color-fast, puncture-proof, very abrasion-resistant, and won't support the growth of bacteria, staph, or fungus. The Xorel upholstery used on the chair has a liquid-proof backing, and can be cleaned by wiping with hot water. Built to list at about $550. Call 800/727-6770. Carnegie, Rockville Centre, N. Y.

236. Fire-rated cellular shade

For commercial applications requiring a soft fabric window treatment, the Graber Crystal-Pleat Facets cellular shades offer privacy as well as thermal and acoustical control. Of the six colors available, white provides a .25 shading coefficient, a 3.30 R-value, and an NRC acoustical rating of .60. The flame-retardant fabric meets the requirement of the NFPA 701 Small Scale test. 800/327-9798. Springs Window Fashions, Montgomery, Pa.

237. Upholstery fabric

Because of its combination of yarns, Triton Stretch fabric is claimed to keep task seating cooler and more comfortable. It is woven from Climatex, a mix of wool, polyester, and ramie that is said to work together to remove heat and moisture from a seating platform's "hot spots." Abrasion tested to 51,000 double rubs, upholstery comes in 13 colors. 800/727-6770. Carnegie, Rockville Centre, N. Y.

238. Light-filtering roller shade

A new window treatment designed specifically for contract installations, roller shades are made with flame-retardant, Sheerweave vinyl-coated fiberglass / polyester fabric in a range of openness configurations from 5 to 30 percent. Other materials in the 53-option contract line include Pima, a semi-opaque woven cotton in 17 colors, and four room-darkening vinyl materials laminated to fiberglass. Aluminum fascia panel and brackets come in white, bronze, and ivory; the clutch mechanism is worked by a beaded-metal chain. Swatch program: 800/937-7895. Hunter Douglas Window Fashions, Upper Saddle River, N.J.

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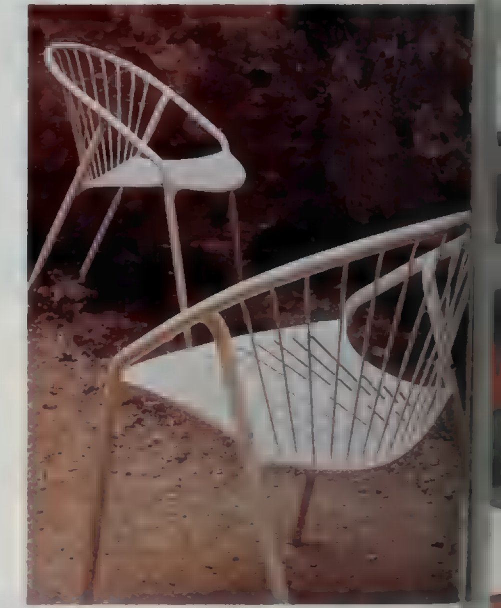
239. Terrace seating

The Catena chair is designed for heavy-duty outdoor use, such as patio restaurants and corporate courtyards. Made of aluminum and stainless steel to be light weight and corrosion resistant, the chairs are finished with a powder-coat system said to resist chipping, peeling, and fading. Chairs can be stacked up to six high; matching tables and aluminum sunshades are available. 800/521-2546. Landscape Forms, Inc., Kalamazoo, Mich.

240. Unobtrusive matting

Enhance 850 walk-off matting, made from combination of fine-denier nylon and olefi cut-pile, is said to remove, hold, and hide dir and water tracked into lobby spaces fro shoes. Intended for entrances and other floor where carpet had been used, the Enhanc product is said to look and seam like broad loom, but with a random, soil-concealin pattern. Most standard sizes can accommo date a logo. 800/852-9722. 3M Commercia Care Division, St. Paul, Minn.



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241. Fabric wall covering

The fire-retardant, vinyl-coated polyester warp and fill yarns of Animation wall-covering fabric are fused at high temperatures to achieve greater dimensional stability. It can be used for wrapped and acoustical panels as well as stretched wall applications. Ten standard colors and custom colors available. Cleanable with vacuum or a brush and detergent or bleach solution. 212/343-4009. The Knoll Group, New York.

242. Polypropylene floor tiles

Kiwi interlocking floor tiles provide a quickly installed, non-slip surface for either long-term or temporary use on any flat surface outdoors or indoors. Particularly suited for car dealerships, the decorative tiles snap together to create a floor surface that can carry even cars and small trucks. Not damaged or stained by most chemicals, oil, grease, brake fluid, or battery acid, 13-in. square tiles come in seven colors. 707/935-3690. Kiwi Tile, Inc. Sonoma, Calif.

243. Versatile Italian

Storm is the newest design from Carlo Bartoli for the Italian manufacturer Segis, an extension of his Breeze indoor/outdoor furniture line. A lightweight stackable chair made with a steel frame and molded polypropylene shell in any of 11 colors, Storm can be specified with arms as well as a fold-down table attachment. A 32-page catalog illustrates the full range of Segis seating. 305/960-1100. Loewenstein, Pompano Beach, Fla.

244. African influenced

Designer Orlando Diaz-Azcuy says his 1996 furniture collection, intended to mark ten years of work with North Carolina manufacturer HBF, was inspired by the dramatic landscape and tribal arts of Africa. The line includes upholstered seating and lounge groups, as well as occasional pieces, such as the slender-legged Kenya tables, pictured. 704/328-2064. Hickory Business Furniture, Hickory, N. C.

245. Wood contract furniture

Moser's Windward collection represents a new thrust by this maker of mortise-and-tenon residential furnishings to meet the specification and production requirements of the contract marketplace. The initial range, intended for library and corporate use, offers 33 variations of occasional and meeting tables, sectionals, casegoods, and lounge seating. The use of interchangeable design elements is said to increase manufacturing efficiency and allow competitive pricing. 800/708-9710. Thos. Moser Cabinetmakers, Auburn, Me.

246. Systems furniture

The Arrio line of height-adjustable desks, mobile tables, screens, storage, and technology support is designed to improve the electronic connectibility of freestanding units in open-plan offices. Lay-in cabling is said to make wiring easy to install and reroute. Options include Work Rails that attach to desks. 800/851-1196. Herman Miller, Inc., Zeeland, Mich.

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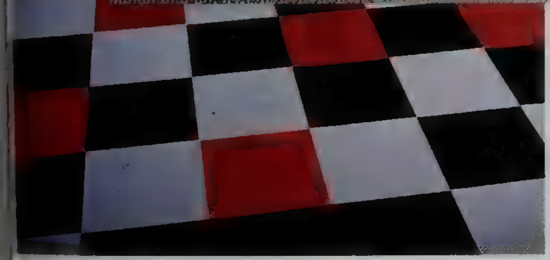
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47. Precast prison dormitories

le-designed to provide larger, column-free
paces, the new Maxi-Dorm is a precast-
oncrete, multiple-occupancy prison cell
esigned for speedy erection. Units can be
esigned, manufactured, erected, and ready
or occupants in weeks. Cells are stackable,
asily relocated, and quickly configured for
ermanent installation. Walls are insulated,
nd finished in epoxy. Watch units being
laced for a Massachusetts prison: oldcastle-
recast.com (Web page). 215/257-8081.
lotondo Precast, Oldcastle Precast East,
nc., Telford, Pa.

48. Giving people a lift

Hill/Climbers travel up and down steep
utdoor grades leading to garden, beach,
treet, or garage. Lifts can go from flat
errain to a 45-deg angle as far as 250 ft.
'here are two sizes: one 29 in. wide, with two
acing seats (pictured); a larger, 50-in.-wide
nit will accommodate a wheelchair. Both
ave a 700-lb capacity. 717/234-8065. Inclina-
or Company of America, Harrisburg, Pa.

49. Roof isolation curb

he Model ESR sound- and vibration-control
urb, with either steel-spring (shown) or air-
pring isolators, is described as easy to adjust
field conditions such as weight distribution,
ariable roof pitches, and obtruding duct-
ork. For hvac and other rooftop equipment
almost any size, curbs meet 1 g seismic and
)0 mph wind-restraint requirements.
4/889-0480. Kinetics Noise Control, Inc.,
ublin, Ohio.

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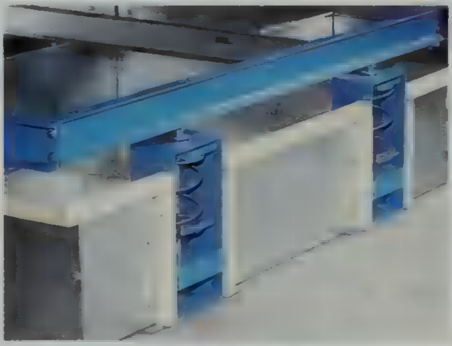

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250. Materials-handling helper

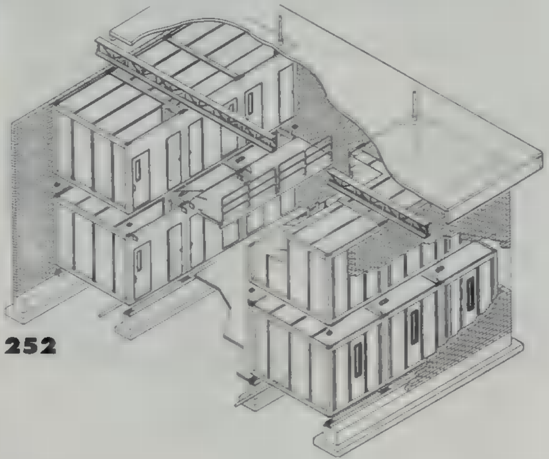
The Smartwaiter, a new Auton motorized lift system, raises and lowers goods, packages, laundry, and food at an efficient speed from floor to floor in institutions and private homes. Used by small artisan shops such as furniture makers, lifts are said to be invaluable as a saver of time, steps, and energy. Reduces the likelihood of damage to goods and equipment moving from floor to floor. Rack and pinion drive provides a smooth, wobble-free operation. 805/257-9282. Auton Company, Valencia, Calif.

251. Hardwood conservatories

Developed in England, modular conservatory kits are said to be easily assembled by a do-it-yourselfer or a professional installer. All units come with safety tempered insulating glass, a triple-wall polycarbonate roof, and double opening French doors. Designed for harsh weather and American snow loads, units meet most local codes. Three styles: Victorian (illustrated), Windsor, and Georgian. 800/963- 8700. Hartford Conservatories, Inc., Woburn, Mass.

252. Modular jail cells

Factory-produced, steel-framed cells arrive on site preplumbed, prewired, furnished, equipped, insulated, and factory-finished with a baked-on polymer. Load-bearing steel walls can be bolted together four-high and will support a roof, serve as an exterior wall of a new facility, or become an addition. Lightweight units can be installed on slabs or as a retrofit within an existing structure, regardless of age. Made in sizes of from 60- to 107-sq ft, cells can be customized to meet any level of security. 201/893-0500. Mark Solutions, Inc., Bloomfield, N. J.



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Sleek. Attractive. Great with any decor. Wiremold™ Access™ 5000 raceway is the elegant solution. Its two-channel design is perfect for AC power, computer, video, telecommunication, and security system wiring. It's available in a wide range of standard colors and fine wood designs – cherry, mahogany, maple, and oak.

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253. Totally self-contained

he Omega Supergrif is truly sleek—but you night have to post how-to-use instructions bove it. Water flow from cold through tepid o hot is controlled by moving the integrated urved handle mounted on top of the faucet tself. Designed by Spanish architect Inés ackson, faucet comes in basin mixer, ub/shower, and bidet configurations; finish ptions include chrome, anthracite, white, and old. 800/969-0339. Opella, Inc., Marietta, Ga.

254. Sensor-operated faucet

loan's new Optima Plus EBF-85 uses a fiber-ptic cable to transmit an infrared beam from he battery-powered control unit, mounted nobtrusively below the counter, to the faucet. lectronics are moisture proof, and allow ome installation flexibility; water flow is conrolled automatically by two-year-life C atteries. An audible signal indicates a low-ower state. 847/671-4300. Sloan Valve Co., ranklin Park, Ill.

55. Totally compliant

new multiuser washbasin configuration, the xpress lavatory requires only one set of lumbing connections. Washbowls and shelf re made of impact-resistant Terreon, a ranite-look solid-surface material available gray, blue, bone, green, and red. Design llows for wheelchair maneuverability, and eets all ADA, ANSI, and UFAS access equirements. Layout options at www.bradl-ycorp.com (Web page). 414/251-6000. radley Corp., Menomonee Falls, Wis.

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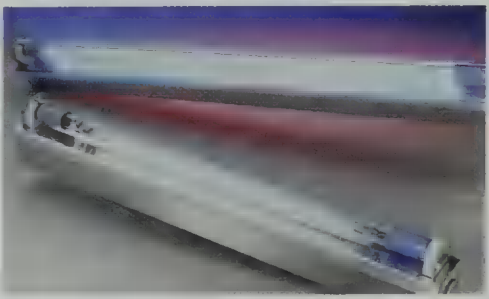

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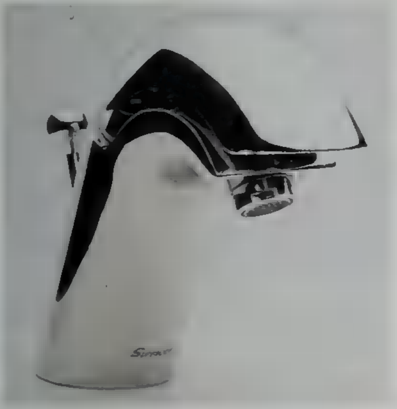

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256. Pressure-balance valve

Gerber says its new shower valve, which neutralizes sudden changes in water temperature to prevent scald injuries, is also built to resist the wear and deterioration caused by hard water conditions. Loop-style handles meet ADA ease of use requirements; corrosion-resistant fittings are available in models for kitchen, tub, and shower. Gerber Plumbing Fixtures Corp., Chicago.

257. Cleaner hvac systems

Designed with compact housings to fit commercial and institutional hvac systems, ultraviolet light sources are said to solve difficult indoor air-quality problems by sterilizing air, killing microorganisms such as flu and cold viruses, as well as mold and mold products. These new UVC emitter tubes are said to use less power more efficiently than previous models. 310/467-8484. Steril-Aire USA, Inc., Cerritos, Calif.

258. Snow-melt system

A new exterior snow and ice melt system uses Raupex cross-linked polyethylene tubing to circulate a heated glycol mixture beneath pavement, walkways, even helicopter landing pads. Tubing resists repeated bending, solvents, and acids. Cost of system is offset by savings in snow removal, liability exposure, and reduction in salt damage. 703/777-5255. Rehau, Inc., Leesburg, Va.

258

Ambient & Task Fixtures • Light Sources • Special Luminaires • Controls • Wiring

259. Multichromatic sconce

The Rainbow sconce features dichroic, spectral-glass lenses that reflect vivid bands of green, magenta, blue, and yellow light; a centralized wash of white light provides focused illumination. Comes with a PAR16 Halogen 65-W lamp. Cast-aluminum housing comes black or polished. 800/223-0726. Lightolier, Inc., Fall River, Mass.

260. Computer-area lighting

Futura indirect fixtures represent a new direction for Luxo, long known as a source for direct task lighting. Luminaire styles include this stem-mounted ceiling light, illuminated by a 55W CFL. Futura fixtures have a spectral-metal reflector said to provide uniform uplighting without glare or veiling reflections on computer screens. The line offers a range of mounting options. Clear polycarbonate lens cover protects lamps from dust and damage. 914/937-4433. Luxo Corporation, Port Chester, N. Y.

261. Prismatic-glass sconce

Like other fixtures in Philippe Starck's Romeo lighting line, his Babe W sconce has a light-catching industrial-glass shade. Stem and bracket are brushed aluminum; a light-diffusing globe shields the lv halogen lamp. Glass shade also comes in cobalt blue; pendant and chandelier versions available. 800/939-3567. FLOS USA, Huntington Station, N. Y.

262. Cool display lighting

LSI's fiber-optic system is designed for museum and retail environments where heat- and UV-sensitive objects are displayed, and for tight architectural spaces such as these niches holding costly handbags. Installations comprise a remote metal-halide or tungsten-halogen light source, bundles of light-carrying, optical-glass fibers, and lighting instruments (lightbars and fixtures). 800/999-9574. Lighting Services, Inc., Stony Point, N. Y.

263. Self-ballast metal halide

Introduced as a working model in 1996, this 22W Rebel is the first metal-halide lamp to contain a miniaturized integrated ballast. Part of the MasterColor color-stabilized line, it will work as a direct replacement for several 60- and 90-W PAR 38 halogen lamps, but will have a 9,000-hr rated life. 800/631-1259. Philips Lighting, Somerset, N. J.

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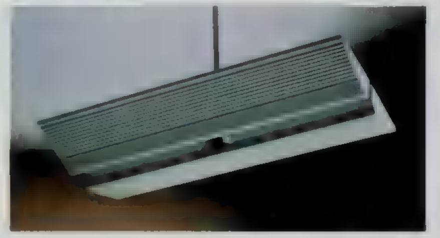

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264. Prewired raceway

Wiremold's Isoduct aluminum raceway system comes factory wired and cut to specified, job-site lengths. Raceway covers are cut in 12-in. lengths for flexibility in adding outlets and circuits. Said to be easy to install electricians simply connect the feeds. Available in single- and multi-compartmen profiles. Standard finish is a corrosion-resistant architectural anodized; powder-coa colors may be ordered. 860/523-3646. Th Wiremold Company, West Hartford, Conn.

265. Indirect pendant lighting

Litedisc Legacy, a nonlinear, indirec pendant, has a light efficiency of 76 net effective lumens per Watt. Available in 29-, 35- and 41-in. diameters, the luminaire can b mounted within 24 in. of the ceiling. Lampin is three to six T5 fluorescent lamps, depending on fixture size. Bowl-shaped diffusers ar acrylic; standard finishes are polished chrom or polished brass, with custom finishes avai able. 800/732-5213. LAM Lighting System Santa Ana, Calif.

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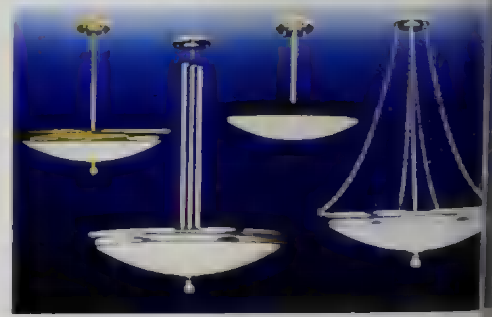

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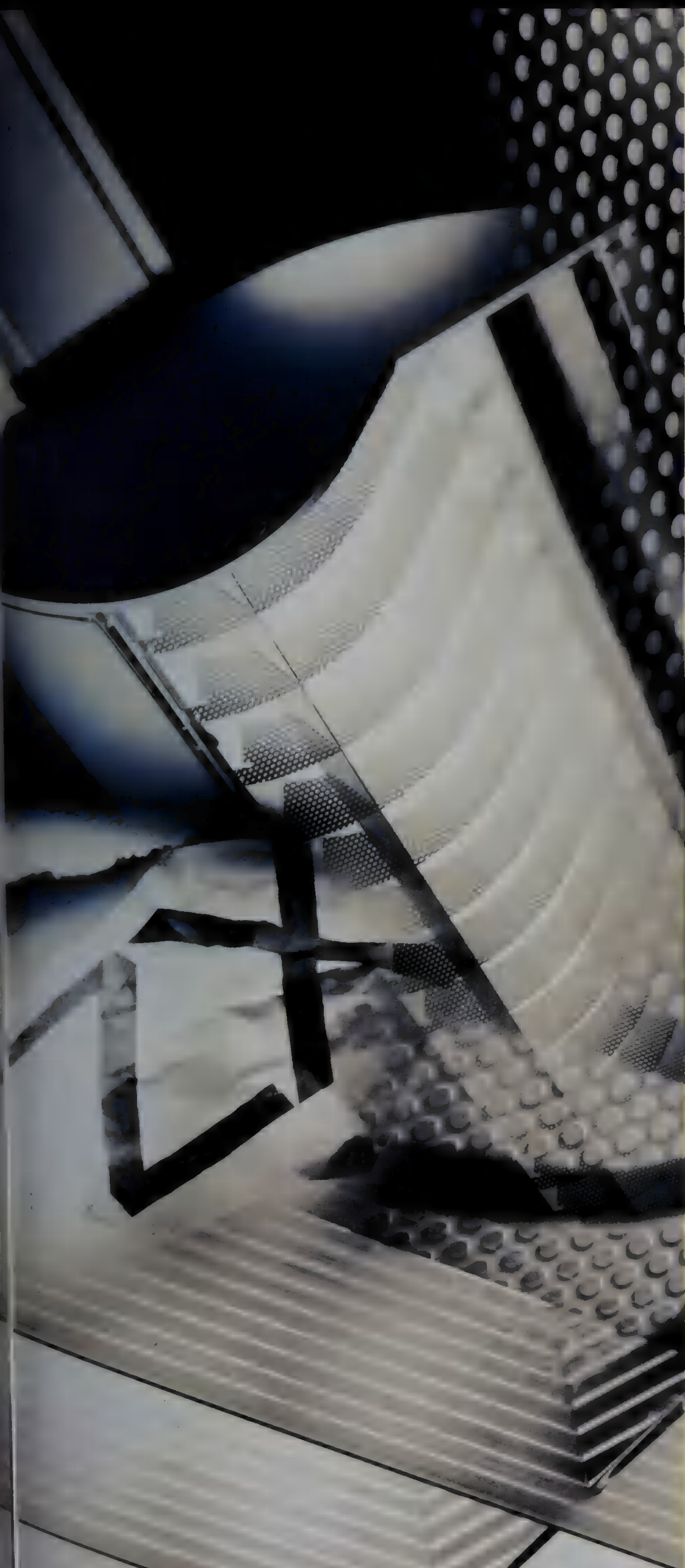

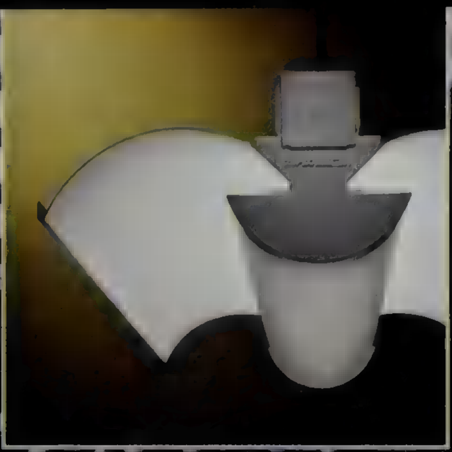

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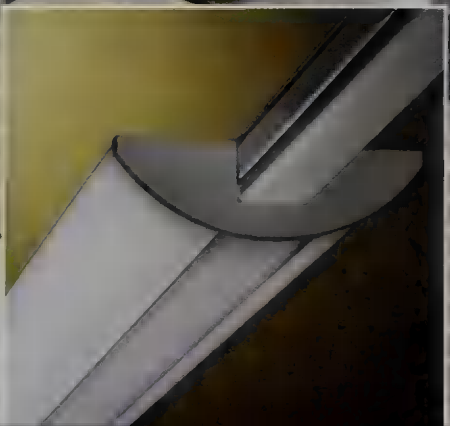

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ZUMTOBEL

266. Trunk-mounted series

The ZX Flexible Lighting System includes two attractive, but not intrusive, luminaires suitable for modern office and retail spaces. NRL gives asymmetrical wall-wash lighting; the ID-S0 (inset) is one of several indirect/direct options with solid or perforated steel sides and an opal acrylic center panel. All luminaires snap onto a powering trunk only 2-in. deep. Catalog demonstrates all fixture options: 800/932-0633. Zumtobel Staff Lighting, Highland, N. Y.

267. Halogen lighting

Tru-Aim Titan MR-16 halogen lamps should produce constant color quality over the rated lamp life—with no color shift or degradation, according to the manufacturer. The reflector has a hard, titanium-oxide coating that ensures constant white color, and uses a capsule that virtually eliminates UV rays. 508/750-2225. Osram Sylvania Inc., Danvers, Mass.

268. Recessed HID pull down

Designed for one ceramic-arc MH-35W or 70W PAR30L lamp, Juno's 8-in. recessed spot can rotate over 350 deg, and can aim to 90 deg vertically. Prewired with a 60Hz ballast; mounting frame is 17 3/4-in. long by 11 1/2-in. wide. Black baffle and white trim. 847/827-9880. Juno Lighting, Inc., Des Plaines, Ill.

269. Personal light control

The Spacer light-control device can dim or switch incandescent or halogen lighting from anywhere in a room via infrared wireless remote control aimed at a wallbox dimmer. Can recall a preset light level, offers power-failure memory, and has a 10-second fade-to-off. Easy to install for single-pole or multi-location dimming. Useful for homes, offices, and restaurants; up to nine dimmers work on the same circuit. Lutron also makes remote-dimming systems for open-office fluorescent lighting. 610/282-3800. Lutron Electronics Co., Inc., Coopersburg, Pa.

270. Occupancy sensors

More responsive than infrared, two ultrasonic ceiling occupancy sensors offer directional monitoring or omnidirectional sensing. The 6878-1W senses occupancy in a 180-deg field, covering 1,000 sq ft, while a larger unit, 6878-2W, covers about 2,000 sq ft over 360 deg. An ambient-light override option keeps lights off when daylight is sufficient. Suitable for work-area cubicles, rest rooms, or partitioned spaces. 800/323-8920. Leviton Manufacturing Co., Inc., Little Neck, N. Y.

271. Cantilevered desk light

The Sonoma task light has a parabolic louvre to reduce glare off work surfaces and VDTs by directing light evenly. An 18-W CFL offers 10,000 hours of life, high lumen output, and a warm, 4100K color temperature; the light goes on at a finger touch. The counterbalanced arm is 34-in. long; an electronic ballast fits in the base. Finish options: black, silver black marble, and wood grain. 847/520-1060 Waldmann Lighting Co., Wheeling, Ill. ■

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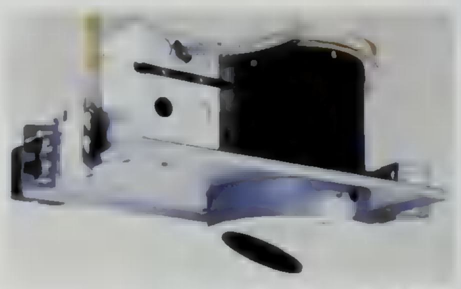

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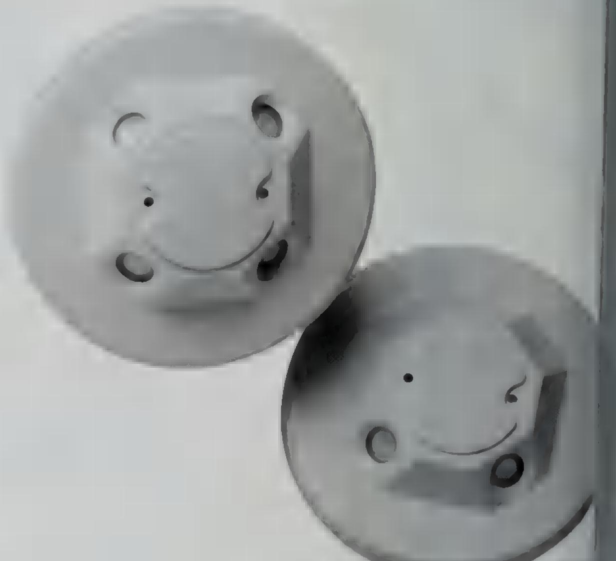

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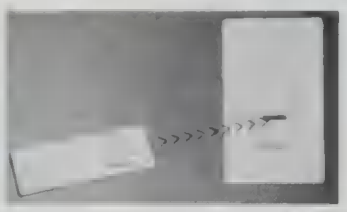

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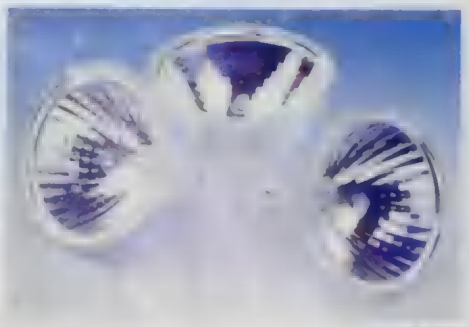

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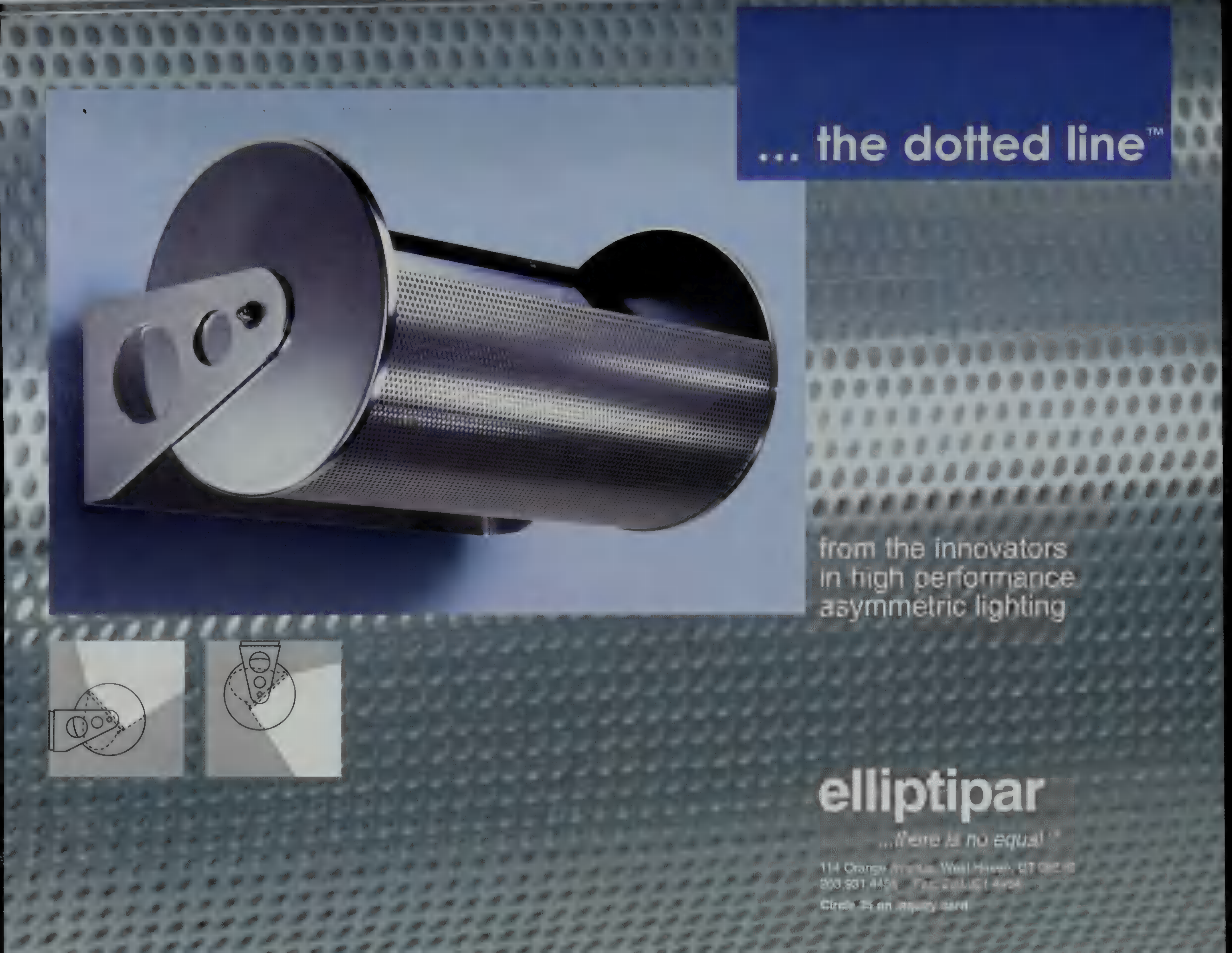

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January 1995—ICC publishes International Plumbing Code and International Private Sewage Disposal Code.

March 1996—ICC published International Mechanical Code.

June 1996—ICC forms technical subcommittees to begin development of International Building Code.

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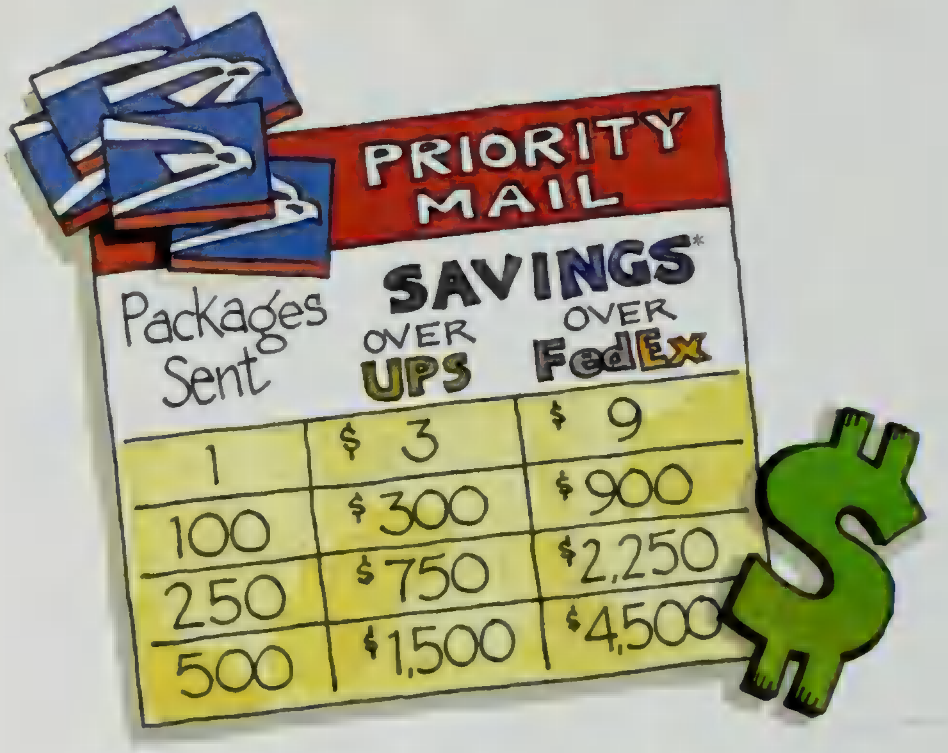

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ol. 184
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TS: Building Types Study
R: Pacific Rim

cademic Buildings: Building 15, Hewlett-Packard Co., Palo Alto, Calif. — Skidmore, Owings & Merrill, archt — Feb., BTS, pp. 84-85. Brearley School, New York — Platt Bayard Dovell Architects, archt — Feb., BTS, pp. 76-77. Casa Italiano restoration, Columbia University, New York — Buttrick White & Burtis/Italo Rota, archt — July, BTS, pp. 80-83 UniverCentral Services Building and Research Tower, National Center for the Arts, Mexico City — Legorreta Arquitectos, archt — Mar., pp. 80-81. Charles B. Thornton Center for Engineering Management, Stanford University, Palo Alto, Calif. — Tanner Leddy Maytum Stacy Architects, archt — "Stanford's New Style" — by Aaron Betsky — Jan., pp. 70-75. Christopher Place, London — Troughton McAslan Architect, archt — Nov. BTS, pp. 108-109. Colgate Darden Graduate School of Business Administration, University of Virginia, Charlottesville, Va. — Robert A. M. Stern Architects, archt, Ayers Saint Gross, archt of record — July, BTS, pp. 72-79. Engineering Research Center, University of Cincinnati, Cincinnati — KZF Incorporated, archt and engineer, Michael Graves Architect, associated archt, Smith Hynchman & Grylls, associated archt and engineer — July, BTS, pp. 86-91. Eric P. Newman Education Center, Washington University, St. Louis, Mo. — Cannon, Architect, archt — "Medical Campus Gets a Meeting Place" — by Cheryl Kent — Nov., pp: 94-97. Forrestal-Bowld Music Center, Phillips Exeter Academy, Exeter, N. H. — William Rawn Associates, Architects, Inc., archt — "Fitting Harmony" — by Nancy Levinson — May, pp. 80-85. Garden Quadrangle, St. John's College, Oxford, England — MacCormac Jamieson Prichard, archt — "History Lesson" — by Hugh Aldersey-Williams — Mar., pp. 92-97. Gates Building, Stanford University, Palo Alto, Calif. — Robert A. M. Stern, archt — July, BTS, p. 71. Inner and Outer Quadrangles restoration, Stanford University, Palo Alto, Calif. — Hardy Holzman Pfeiffer Associates, archt — July, BTS, pp. 68-69. Kellogg Conference Center, Gallaudet University, Washington, D. C. — Einhorn Yaffee Prescott, Architecture and Engineering, archt — Nov. BTS, pp. 106-107. Mark Taper Center/Inner-City Arts, Los Angeles — Michael Maltzan Architecture, archt — Feb., BTS, pp. 78-83. Memorial Hall restoration and renovation, Harvard University, Cambridge, Mass. — Venturi Scott Brown & Associates, archt, Brunner/Cott & Associates, associated archt, Robert G. Neiley, Architects, restoration archt — "Harvard Hub Takes on New Aura" — by Nancy Levinson — July, BTS, pp. 94-99. National Center for the Arts, Mexico City — Ricardo Legorreta, masterplanner — Mar., pp. 78-79. National Conservatory of Music, National Center for the Arts, Mexico City — Teodoro Gonzales de Leon Arquitecto, archt — Mar., pp. 84-87. National School of Dance, National Center for the Arts, Mexico City — Luis-Vicente Flores Arquitecto, archt — Mar., pp. 88-89. Olympic College Shelton, Shelton, Wash. — The Miller/Hull Partnership, archt — "A True Community College" — by Sheri Olson — Nov. pp.90-93. School of Dramatic Arts, National Center for the Arts, Mexico City — TEN Arquitectos, archt — Mar., p. 90. School of Visual Arts, National Center for the Arts, Mexico City — Legorreta Arquitectos, archt — Mar., pp. 82-83. Science and Engineering Quadrangle, Stanford University, Palo Alto, Calif. — James Freed, archt — July, BTS, p. 70. "Stanford Recaptures Lost Grandeur" — by Aaron Betsky — July, BTS, pp. 66,68,71. Tomanek Hall, Fort Hays State University, Hays, Kan. — Horst, Terrill & Karst, archt, Stecklein & Brungardt, associated archt — July, BTS, pp. 92-93. The Training Resource and Assistive Technology Center, University of New Orleans, New Orleans — Errol Barron/Michael Toups Architects, archt — Nov. BTS, pp. 110-111. University of Illinois at Chicago — "Softening Brutalism: Is Anything Lost?" — by Cheryl Kent — Aug., pp. 21-22. Washington University Psychology Building, Saint Louis, Mo. — Skidmore, Owings & Merrill, Chicago, archt, Paradigm, associate archt — July, BTS, pp. 84-85

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Airports: Exchange Module, Charles de Gaulle Airport, Roissy-en-France, France — Paul Andreu; Jean-Marie Duthilleul, archt — "The Crossroads of France" — by Claire Downey — Jan., pp. 76-85.

Andreu, Paul; Jean-Marie Duthilleul, archt — Exchange Module, Charles de Gaulle Airport, Roissy-en-France, France — "The Crossroads of France" — by Claire Downey — Jan., pp. 76-85.

Architrope, archt — SRO Residence, Brooklyn, N. Y. — Jan., BTS, pp. 92-93.

Aldersey-Williams, Hugh — "History Lesson" — Garden Quadrangle, St. John's College, Oxford, England — MacCormac Jamieson Prichard, archt — pp. 92-97.

Architectural Lighting Design, lighting dsgnr, Albert C. Martin & Associates, archt — Padre Sierra Parish Church, Camarillo, Calif. — Feb., RL, — pp. 14-17.

Architekton, archt — City of Tempe Police Substation, Tempe, Ariz. — June BTS, pp. 96-101

Arquitectonica, archt — U. S. Embassy Chancery Building, Lima, Peru — Oct., pp. 78-87.

Audin, Lindsay — "Low-Tech Dimmers Meet Fluorescent" — Aug. RL, pp. 10,28. "Surf the Internet for Lighting" — May RL, p. 11. "Utility Deregulation: The Uncertain Future" — Feb., RL, p. 9

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Ayers Saint Gross, archt of record, Robert A. M. Stern, archt — Colgate Darden Graduate School of Business Administration,

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Backen Arrigoni & Ross, archt — Sun Microsystems, Menlo Park, Calif. — Dec. BTS, p. 25.

Baker, Kermit, and Robert Murray — "Two Crystal Balls" — June, pp. 36-39.

Barganier Davis Sims Architects Associated, archt — Alabama Judicial Building, Montgomery, Ala. — Mar. BTS, pp. 100-103.

Barnett, Robert Spencer — "Redesigning the Architect" — Feb., pp. 32-35,110.

Barron,Errol/Michael Toups Architects, archt — The Training Resource and Assistive Technology Center, University of New Orleans, New Orleans — Nov. BTS, pp. 110-111.

Beha, Ann, Associates, archt, Charles Cosler Theatre Design, lighting dsgnr — Jordan Hall, New England Conservatory of Music, Boston — Feb., RL, pp. 24-25.

Bennetts Associates, archt — PowerGen Building, Coventry, England — "Brighter Buildings for Great Britain" — by Adam Jackaway — Nov. RL, pp. 28-29.

Bergdoll, Barry — "Remaking Bucharest: Are Ideas Enough?" — Nov., pp. 49-51.

Bergmeyer Associates, archt of record, François de Menil, archt — Bottega Veneta, Copley Place Mall, Boston — May BTS, pp. 108-109. Archt — The Original Levi's Store, New York City — May BTS, pp. 106-107.

Betsky, Aaron — "Agile Architecture" — Silicon Graphics Entry Site, Mountain View, Calif. — Studios Architecture, archt — May, pp. 72-79. "Baywatch or Workplace?" — f/X Network Corporate Headquarters, Los Angeles — Fernau & Hartman Architects, archt — Sept. BTS, pp. 72-77. "Boxes With a Twist" — Northern Telecom, Santa Clara, Calif. — Studios, archt — Dec. BTS, pp. 40-43. "Clip-Ons Enhance a Factory" — 3Com Building 500, Santa Clara, Calif. —Studios Architecture, archt — Dec. BTS, pp. 34-39. "Stanford's New Style" — Charles B. Thornton Center for Engineering Management, Stanford University, Palo Alto, Calif. — Tanner Leddy Maytum Stacy Architects, archt — Jan. pp. 70-75. "House Hovers Over Desert" — Burnette Studio/House, Sunnyslope, Ariz. — Wendell Burnette, archt — Apr. BTS, pp. 94-101. "Stanford Recaptures Lost Grandeur" — July, BTS, pp. 66,68,71.

Binder, R. L., Architecture & Planning, archt — Northeast Valley Multipurpose Senior Center, Pacoima, Calif. — Nov. BTS, pp. 102-105.

Book Reviews: "Achtung Arkitektur!: Image and Phantasm in Contemporary Austrian Architecture" — by Eeva-Liisa Pelkonen — Sept., p. 28. "Alvar Aalto" — by Richard Weston — Sept., p. 28. "The American City: What Works, What Doesn't" — by Alexander Garvin — June, p. 28. "The Architect's Studio Companion: Rules of Thumb for Preliminary Design" — by Edward Allen and Joseph Iano — Apr., p. 24. "Charles and Ray Eames: Designers of the Twentieth Century" — by Pat Kirkham — Feb., p. 17. "City of Bits: Space, Place, and the Infobahn" — by William Mitchell — Feb., p. 25. "Designing With Nature: The Ecological Basis for Architectural Design" — by Ken Yeang — Apr., p. 24. "Encyclopedia of American Architecture" — by Robert Packard and Balthazar Korab — June,

p. 28. "Flesh and Stone: The Body and the City in Western Civilization" — by Richard Sennett — Apr., p. 24. "Form Follows Finance: Skyscrapers and Skylines in New York and Chicago" — by Carol Willis — Sept., p. 27. "Hariri & Hariri" — compiled by Oscar Riera Ojeda — June, p. 28. "Intelligent Glass Facades: Material, Practice, Design" — by Andrea Campagno — Sept., p. 28. "John M. Johansen: A Life in the Continuum of Modern Architecture" — by John M. Johansen — Apr., p. 24. "Light Revealing Architecture" — by Marietta S. Millet — May RL, p. 9. "The New American Ghetto" — by Camilo José Vergara — June, p. 28. "The Lewis Mumford Reader" — by Donald L. Miller — Sept., p 28. "Nightlands: Nordic Building" — by Christian Norberg-Schulz — Sept., p. 28. "Parallel Utopias: The Quest for Community, The Sea Ranch, California: Seaside, Florida" — by Richard Sexton — Apr., p. 23. "Reconstructing Architecture for the 21st Century: An Inquiry Into the Architect's World" — by Anthony Jackson — Sept., p. 27. "Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture" — by Kenneth Frampton — Sept., p. 28. "Twentieth-Century Building Materials: History and Conservation" — by Thomas C. Jester — Sept., p. 28. "Winning by Design: Architectural Competitions" — by Judith Strong — June, p. 28.

Bottom Duvivier, archt — Hewlett Packard, Roseville, Calif. — Dec. BTS, p. 23.

Brendle, Michael, Architects, archt — Ross-University Hills Branch Library, Denver — June BTS, pp. 92-95.

Brett Kratzer/Charles Aenlle/FRCH Architects, archt, Craig A. Roeder Associates, Inc., lighting dsgnr — Coronado Shopping Mall, Albuquerque, N. M. — by Nayana Currimbhoy — May RL, — pp. 26-27.

Bruegmann, Robert — "Furniture Maker's Sustainable Setting" — Miller SQA, Holland, Mich. — William McDonough + Partners, archt — Dec. BTS, pp. 26-33.

Brunner/Cott & Associates, associated archt, Venturi Scott Brown & Associates, archt, Robert G. Neiley, Architects, restoration archt — Memorial Hall restoration and renovation, Harvard University, Cambridge, Mass. — "Harvard Hub Takes on New Aura" — by Nancy Levinson — July, BTS, pp. 94-99.

Building Security: See *The Profession.*

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Building Types Studies: "Building Types Study 733/Affordable Housing" — Jan., pp. 86-95. "Building Types Study 734/Adaptive Reuse" — Feb., pp. [illegible]. "Building Types Study 735/Justice Facilities" — Mar., pp. 98-107. "Building Types Study 736/Record Houses 1996" — pp. 71-117. Building Types Study 737/Retail — May, pp. 104-113. Building Types Study 738/Community Buildings — June, pp. [illegible]. Building Types Study 739/Academic Buildings — July, pp. 65-99. Building Types Study 740/Sports Facilities — Aug., pp. 108-117. Building Types Study 741/Interiors — Sept., pp. [illegible]. Building Types Study 742/Hotels — Oct., pp. [illegible]. Building Types Study 743/Special Users — Nov., pp. 98-113. Building Types Study 744/Knowledge-Based Production Facilities — Dec. pp. 23-49.

Burkett, Randy, Lighting Design, lighting dsgnr, Rodney E. Lay & Associates, naval archt — American Queen, Mississippi River — "Capturing the Romance of River Boats" — by Nayana Currimbhoy — Aug. RL, pp. 18-19.

Burnette, Wendell, archt — Burnette Studio/House, Sunnyslope, Ariz. — "House Hovers Over Desert" — by Aaron Betsky — Apr. BTS, pp. 94-101.

Bussell, Abby — "A New Age of City Building Is Forecast at U. N.'s Habitat II Conference" — Aug., p. 13.

Buttrick White & Burtis/Italo Rota, archt — Casa Italiano restoration, Columbia University, New York — July, BTS, pp. 80-83.

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Cambridge Architectural Research Ltd., daylighting dsgnr, RH Partnership, archt — The Ionica Building, Cambridge, England — "Brighter Buildings for Great Britain" — by Adam Jackaway — No. RL, pp. 30-31.

Campbell, Robert — "The Boldness Gap: Why America Is Falling Behind Other Countries" — Nov., pp. 76-79.

Cannon, Architect, archt — Eric P. Newman Education Center, Washington University, St. Louis, Mo. — "Medical Campus Gets a Meeting Place" — by Cheryl Kent — Nov., pp. 94-97.

Chia, Katherine Kai-sun — "Beating the Clock: RapidConstruction in Asia" — July, PR, pp. 26-27.

Child Care Centers: MCA/Universal Child CareCenter, Los Angeles — Rios Associates, archt — Mar., pp. 70-73.

Chisholm Washington Associates, assoc archt, Leers Weinzapfel Associates, archt — Robert White Youth Development Center, Boston — June BTS, pp. 88-91.

Clark, Carol — "Public Housing Remains Strong in Both Private and Public Sectors" — July, PR, p. 10.

Cline Bettridge Bernstein Lighting Design, lighting dsgnr, Cesar Pelli & Associatea, archt, Patri-Burlage-Merker, associate archt — One Market Street Plaza, San Francisco — May RL, pp. 30-33.

Cohn, David — "International Practice - Europe: Not for the Faint of Heart" — July, pp. 40-41,150.

Computer Hardware & Software [by Steven S.Ross] — "Data Sources Star at A/E/C Systems" — Aug., — pp. 55-60.

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CORE, archt — National Minority AIDS COuncil Headquarters, Washington, D. C. — Feb. BTS, pp. 96-97. Sprint Spectrum, Tyson's Corner, Va. — May BTS, pp. 110-111.

Cosler, Charles, Theatre Design, lighting dsgnr, Ann Beha Associates, archt — Jordan Hall, New Englanbd Conservatory of Music, Boston — Feb. RL, pp. 24-25.

"A Warm Welcome for the Electronic Hearth" — by Michael J. Crosbie — Apr., pp. 38-41, 125.

Crosbie, Michael J. — "Two Paths to Competitive Success" — Sept., pp. 40-43,127.

Currimbhoy, Nayana — "Capturing the Romance of River Boats" — American Queen, Mississippi River — Rodney E. Lay & Associates, naval archt, Randy Burkett Lighting Design, lighting dsgn — Aug. RL, pp. 18-19. "Light Games at the Olympics" — Centennial Olympic Park, Atlanta — Nov. RL, pp. 18-21. Coronado Shopping Mall, Albuquerque, N. M. — Brett Kratzer/Charles Aenlle/FRCH Architects, archt, Craig A. Roeder Associates, Inc., lighting dsgnr — May RL, pp. 26-27. "Divine Inspiration" — Saint Mary's Cathedral of the Immaculate Conception, Portland, Ore. — Thomas Hacker and Associates, archt, Interface Engineering, lighting dsgnr — Aug. RL, pp. 24-25. "Eyewear Shops Show Architect's Double Vision" — Dr. Jimmy Fong Optometry, San Francisco — John Lum Architect, archt, Illumination Design Collaborative, lighting dsgnr; Urban Eyes Optometry, San Francisco — John Lum Architecture, archt, Light Source, lighting dsgnr — Aug. RL, pp. 20-23. "Lighting Lets the Mood Swing" — The Edge Cafe, Colgate University, Hamilton, N. Y. — Einhorn Yaffee Prescott, Architecture & Engineering, archt and lighting dsgnr — Aug. RL, pp. 16-17. "A Theatrical Metaphor in Lights" — Ford Centre for the Performing Arts, Vancouver, British Columbia — Moshe Safdie Associates Ltd., archt, Suzanne Powadiuk Designs, architectural lighting dsgnr, Jules Fisher/Joshua Dachs Associates, Inc., theatrical lighting dsgnr — Nov. RL, pp. 24-27. "Where Nostalgia Meets Sci-Fi" — Planet Hollywood, Walt Disney World, Orlando, Fla. — Rockwell Group, archt, Focus Lighting and Rockwell Group, lighting dsgnr — Feb. RL, pp. 18-23.

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Dagit-Saylor Architects, archt — Logan Anthropology Museum, Beloit College, Beloit, Wisc. — Feb., — pp. 98-99.

de Leon, Teodoro Gonzalez, Arquitecto — National Conservatory of Music, National Center for the Arts, Mexico City — Mar., pp. 84-87.

de Menil, François, archt, Bergmeyer Associates, arch of record — Bottega Veneta, Copley Place Mall, Boston — May BTS, pp. 108-109.

Desgrippes Gobé & Associates, archt, Barry Koretz Associates, archt of record — The Rockport Store, New York City — May BTS, pp. 112-113.

DMJM/Keating and Hee-Rim Architects, archt — Korea Development Bank, Seoul, South Korea — July, PR, p. 3.

Downey, Claire — "The Crossroads of France" — Exchange Module, Charles de Gaulle Airport, Roissy-en-France, France — Paul Andreu; Jean-Marie Duthilleul, archt — Jan., pp. 76-85.

DP Architects, archt of record, Tsao & McKown, arch — Suntec City, Singapore — May, pp. 86-95.

Drulis, Charles, & Michael Ross, Architect, archt — Emergency Operations Center, Alameda County, Calif. — June BTS, p. 102.

Dunlop, Beth — "Designs on the Future" — Jan., — pp. 64-69. "Lapidus Laughs Last" — Sept. BT pp. 92-97.

Durden, Steven, Ruard Veltman, Thomas Tretheway, archt — Yancey Chapel, Hale County, Ala. — Mar. pp. 75-77.

Duthilleul, Jean-Marie; Paul Andreu, archt — Exchange Module, Charles de Gaulle Airport, Roissy-en-France, France — "The Crossroads of France" — by Claire Downey — Jan., pp. 76-85.

ditorials (by Stephen Kliment)— "Bloody Sunset: Housing Tax Credits Head for Oblivion, Unless —" — Jan., p. 7. "Carnegie Report: Quiet Thunder on the Education Front" — June, p. 9 "Faces of Justice" — Mar., p. 9. "Ready for Inspection" — May, p. 9. "RECORD Offers Readers Chance to Earn Continuing-Education Credits" — Apr., p. 9. "Unfinished Business" — July, p. 9. "Wanted: Better Background Architecture" — Feb., p. 9.
hrlich, Steven Architects, archt — Bus Wellness Center, Santa Monica, Calif. — Sept. BTS, 102-103.
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llerbe Becket, Inc., archt — Kiel Center Arena, St. Louis — Aug., BTS, pp. 114-117.
LS/Elbasani & Logan Architects, archt, Horton-Lees Lighting Design, lighting dsgnr — Eastridge Mall, San Jose, Calif. — May RL, pp. 24-25; Irvington Community Center, Fremont, Calif.— June BTS, pp. 82-87.
nvironmental Design: See *The Profession.*
pstein, A., and Sons International, Inc., associate archt/engineer, Josef P. Kleihues, Inc., archt — Museum of Contemporary Art, Chicago — "Kleihues Defies Skepticism to Create Chicago Landmark" — by Cheryl Kent — Aug., pp. 80-87.
xhibition Centers: Neue Messe Leipzig, Leipzig, Germany — von Gerkan, Marg and Porter, archt — "Crystal Pallace for Reborn Trade Center" — by Mary Pepchinski — Nov., pp. 80-89. Taegu Trade and Product Exhibition Center, Taegu, South Korea — Leonard Parker Associates and Korea Architects, archt — July, PR, p. 2.

mily Leave: See *The Profession.*
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sher, Jules/Joshua Dachs Associates, Inc., theatrical lighting dsgnr, Suzanne Powadiuk Designs, architectural lighting dsgnr, Moshe Safdie Associates Ltd., archt — Ford Center for the Performing Arts, Vancouver, British Columbia — "A Theatrical Metaphor in Lights" — by Nayana Currimbhoy — Nov. RL, pp. 24-27.
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nke, Rüdiger, site supervising archt, Michael Wilford and Partners, archt — Sto Regional Depot, Hamburg, Germany — Aug., pp. 102-107.
Freed, James Inigo, archt — Science and Engineering Quadrangle, Stanford University, Palo Alto, Calif. — July, BTS, p. 70.
Freedman Tung & Bottomley, urban planner, Luminae Souter Lighting Design, lighting dsgnr — Second Street Relighting, Phoenix, Ariz. — May RL, pp. 28-29.
Fukuoko Jisho Company, Ltd., associate archt, Michael Graves, archt — Hyatt Regency Hotel, Fukuoko, Japan — Oct. BTS, pp. 99-101.

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Gantenbein, Douglas — "Schools Face Funding Bind" — June, pp. 41,114.
GDP Architects and RTKL Associates, archt — TNB Corporate Tower, Kuala Lumpur, Malaysia — July, PR, p. 3.
Germán del Sol & José Cruz O. Arquitectos, archt — Hotel explora, Patagonia, Chile — Oct. BTS, pp. 108-109.
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Government Buildings: Alabama Judicial Building, Montgomery, Ala. —Barganier Davis Sims Architects Associated, archt — Mar. BTS, pp. 100-103. "Berlin's New U. S. Embassy: Safeguarding a Symbol" — Mar., pp. 36-43. "Community Buildings: Coping With Change" — June BTS, pp. 66-67. "Courthouse Design Growth: Field Forms a Sure Market" — by Tom Ichniowski — Mar. BTS, p. 98. Emergency Operations Center, Alameda County, Calif. — Michael Ross & Charles Drulis, Architect, archt — June BTS, p. 102. Kent County Correctional Facility, Grand Rapids, Mich. — Neumann/Smith Associates, archt — Mar. BTS, pp. 104-107. "Prison Design: Elusive Opportunities in a Big Field" — by Barbara A. Nadel — Mar. BTS, p. 99. City of Tempe Police Substation, Tempe, Ariz. — Archcitekton, archt — June BTS, pp. 96-101. Tonnelle Avenue Firehouse, North Bergen, N. J. — Dean Marchetto & Associates, archt — June BTS, p. 103. U. S. Embassy Chancery Building, Lima, Peru — Arquitectonica, archt — Oct., pp. 78-87.
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Hacker, Thomas, and Associates, archt, Interface Engineering, lighting dsgnr — Saint Mary's Cathedral of the Immaculate Conception, Portland, Ore. — "Divine Inspiration" — by Nayana Currimbhoy — Aug. RL, pp. 24-25.
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Hall, Greg — "Uncertain Politics Don't Stop Foreign-Trained Architects From Returning Home" — July, PR, p. 5.
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Harpole, Tom — "Resisting Natural and Human Forces" — May, pp. 34-37.
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Heller, Barbara — "Overcoming Pitfalls in Product Literature" — Aug., pp. 50-51.
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Holbrook, Dana — "Is There a Quiet Place in the Alternative Office?" — No., pp. 54-57.
Horst, Terrill & Karst, archt, Stecklein & Brungardt, associated archt — Tomanek Hall, Fort Hays State University, Hays, Kan. — July, BTS, pp. 92-93.Horton-Lees Lighting Design Inc., lighting dsgnr, ELS/Elbasani & Logan Architects, archt — Eastridge Mall, San Jose, Calif. — May RL, pp. 24-25.
Hoskin, John — "Building Boom Clouded by Oversupply and Traffic Congestion" — July, PR, p. 19.
Hotels and Motels: Costa Rica Marriott, San Jose, Costa Rica — Zürcher Arquitectos, S. A., archt, Spillis Candela & Partners, Inc., associated archt — Oct. BTS, pp. 102-105. Hotel explora, Patagonia, Chile — Germán del Sol & José Cruz O. Arquitectos, archt — Oct., BTS, pp. 108-109. Hotel Mansfield, New York — Pasanella + Klein/Stolzman + Berg Architects, archt — Oct. BTS, pp. 106-107. "Hotels Are Back, but..." — Oct. BTS, p. 98. Hyatt Regency Hotel, Fukuoka, Japan — Michael Graves, archt, Fukuoko Jisho Company, Ltd., associate archt — Oct., BTS, pp. 99-101.
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pp. 80-83. Lott House and guest house, Houston, Tex. — Carlos Jimenez Architecture Studio, archt — Apr. BTS, pp. 90-93. Stremmel House, Reno, Nev. — Mack Architects, archt, Leo Parker, archt of record — Apr. BTS, pp. 70-79. Rural house for an artist and a writer, Nova Scotia — Richard Gluckman Architects, archt — Apr. BTS, pp. 102-105.
Housing & Apartments: Gateway Gardens, Jakarta, Indonesia — Timothy Seow Group, archt — July, PR, p. 3. Homan Square, Chicago — Nagle Hartray Danker Kagan McKay Architects/Planners, archt — Jan. BTS, pp. 88-91. Los Esteros Apartments, San Jose, Calif. — Fisher-Friedman Associates, archt — Jan. BTS, p. 94-95. "Making Affordable Projects Work" — by H. Jane Lehman — Jan. BTS, pp. 86-87. Pusan Dang-gam Housing, Pusan, South Korea — Hak Sik Son, archt — July, PR, p. 3. SRO Residence, Brooklyn, N. Y. — Architrope, archt — Jan. BTS, pp. 92-93. Suzhou Garden Villas, Suzhou, China — Wong Chen Associates, archt, Suzhou Architectural Design, associate archt/engineer — July, PR, pp. 34-37.

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IBI Group, archt — Fleetwood Civic Center, Surrey, B. C. — June BTS, p. 103.
Ichniowski, Tom — "Courthouse Design: Growth Field Forms a Sure Market" — Mar. BTS, p. 98. "Upward Momentum for Infrastructure" — Nov., pp. 39,127.
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Indicators: See *The Profession*.
Industrial Buildings: Fore Systems, Warrendale, Pa. — Studios Architecture, archt — Dec. BTS, p. 23. Hewlett Packard, Roseville, Calif. — Bottom Duvivier, archt — Dec. BTS, p. 24. Miller SQA, Holland, Mich. — William McDonough + Partners, archt — "Furniture Maker's Sustainable Set" — by Robert Bruegmann — Dec. BTS, pp. 26-33. Northern Telecom, Santa Clara, Calif. — Studios Architecture, archt — "Boxes With a Twist" — by Aaron Betsky — Dec. BTS, pp. 40-43. Prince Street, Cartersville, Ga. — Thompson, Ventulett, Stainback & Associates, archt — Dec. BTS, pp.44-49. Silicon Graphics Entry Site, Mountain View, Calif. — Studios Architecture, archt — "Agile Architecture" — by Aaron Betsky — May, pp. 72-79. Silicon Graphics, North Charleston Site, Mountain View, Calif — Studios Architecture, archt — Dec. BTS, p. 23. Sto Regional Depot, Hamburg, Germany — Michael Wilford and Partners, archt, Rüdiger Franke, site supervising archt — Aug., pp. 102-107. Sun Microsystems, Menlo Park, Calif. — Backen, Arrigoni & Ross, archt — Dec. BTS, p. 22. [illegible] Building 500, Santa Clara, Calif. — Studios Architecture, archt — "Clip-Ons Enhance a Factory" — by Aaron Betsky — Dec. BTS, pp. 34-39. UWest, Morton Groves, Ill. — Valerio Dewalt Train Associates, archt — Sept. BTS, pp. 98-101.
Interface Engineering, lighting dsgnr, Thomas Hacker and Associates, archt — Saint Mary's Cathedral of the Immaculate Conception, Portland, Ore. — "Divine Inspiration" — by Nayana Currimbhoy — Aug. RL, pp. 24-25.
Interiors: Bus Wellness Center, Santa Monica, Calif. — Steven Ehrlich Architects, archt — Sept. BTS, pp. 102-103. Clark Atlanta University Art Gallery, Atlanta — Scogin Elam and Bray Architects, Inc., archt — Sept. BTS, pp. 78-79. f/X Network Corporate Headquarters, Los Angeles — Fernau & Hartman Architects, archt — "Baywatch or Workplace?" — by Aaron Betsky — Sept. BTS, pp. 72-77. House in Toronto, Toronto — Shim-Sutcliffe, archt — Sept. BTS, pp. 104-107. Science, Industry and Business Library, The New York Public Library, New York — Gwathmey Siegel & Associates Architects, archt — Sept BTS, pp. 84-91. Don and Sylvia Shaw Salon & Spa, Dunwoody, Ga. — Scogin Elam and Bray Architects, archt —Sept. BTS, pp. 80-83. UWest, Morton Groves, Ill. — Valerio Dewalt Train Associates, archt — Sept. BTS, pp. 98-101.
Ivy, Robert, new editor in chief of Architectural Record — Nov., p. 11

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Jackaway, Adam — "Brighter Buildings for Great Britain" — Nov. RL, pp. 28-31.
Jankowski, Wanda — "Sculpting Nightscapes Out of the Darkness" — Nov. RL, pp. 22-23.
Jimenez, Carlos, Architecture Studio, archt — Lott House and guest house, Houston, Tex. — Apr. BTS, pp. 90-93

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Kent, Cheryl — "Kleihues Defies Skepticism to Create Chicago Landmark" — Museum of Contemporary Art, Chicago —Josef P. Kleihues, Inc., archt, A. Epstein and Sons International, Inc., associate archt/engineer — Aug., pp. 80-87. "Medical Campus Gets a Meeting Place" — Eric P. Newman Education Center, Washington University, St. Louis, Mo. — Cannon, Architect, archt — Nov., pp. 94-97. "Softening Brutalism: Is Anything Lost?" — Aug., pp. 21-22.
Kidd, Phillip E. — "Economy Won't Impede Growth" — Nov., p. 38.
Killefer Flammang Purtill Architects, archt — Mid-Valley Regional Library, Los Angeles — June BTS, p. 102.
Kim, Jinai — "Foreign Competition Sparks Debate" — July, PR, p. 8.
Kitchens and Baths: See *The Profession*.
Kleihues, Josef P., archt, A. Epstein and Sons International, associate archt/engineer — Museum of Contemporary Art, Chicago — "Kleihues Defies Skepticism to Create Chicago Landmark" — by Cheryl Kent — Aug., pp. 80-87.
Klein Dytham Architects, archt — Video Sento, Tokyo — July, PR, p. 2.
Kohn Pedersen Fox Associates, archt — Rodin Museum at Samsung Plaza, Seoul, South Korea — July, PR, p. 2.
Koning Eizenberg Architecture, archt — Gilmore Bank, Los Angeles — Feb. BTS, pp. 72-75; Sepulveda Recreation Center Gymnasium, Los Angeles — June BTS, pp. 78-81.
Korea Architects and Leonard Parker Associates, archt — Taegu Trade and Product Exhibition Center, Taegu, South Korea — July, PR, p. 2.
Koretz, Barry, Associates, archt of record, Desgrippes Gobé & Associates, archt — The Rockport Store, New York City, May BTS mpp. 112-113.
KZF Incorporated, archt and engineer, Michael Graves Architect, associated archt, Smith, Hinchman & Grylls, associated archt and engineer — Engineering Research Center, Cincinnati University, Cincinnati — July, BTS, pp. 86-91.

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Lake/Flato Architects, archt — Great Northwest Branch Library, San Antonio, Tex. — "A Warehouse for Books" — by Gerald Moorhead — June BTS, pp. 68-73.
Lapidus, Morris — "Lapidus Laughs Last" — by Beth Dunlop — Sept. BTS, pp. 92-97.
Lay, Rodney E., & Associates, naval archt, Randy Burkett Lighting Design, lighting dsgnr — American Queen, Mississippi River — "Capturing the Romance of River Boats" — by Nayana Currimbhoy — Aug. RL, pp. 18-19.
Leers Weinzapfel Associates, archt, Chisholm Washington Associates, assoc archt — Robert White Youth Development Center, Boston — June BTS, pp. 88-91.
Legorreta, Ricardo, masterplanner — National Center for the Arts, Mexico City — Mar. 78-79.
Legorreta Arquitectos, archt — Central Services Building and Research Tower, National Center for the Arts, Mexico City — Mar., pp. 80-81. School of Visual Arts, National Center for the Arts, Mexico City — Mar., pp. 82-83.
Lehman, H. Jane — "Making Affordable Projects Work" — Jan., BTS, pp. 86-87.
Levinson, Nancy — "Fitting Harmony" — Forrestal-Bowld Music Center, Phillips Exeter Academy, Exeter, N. H. — William Rawn Associates, Architects, Inc., archt — May, pp. 80-85. "Harvard Hub Takes on New Aura" — Memorial Hall restoration and renovation, Harvard University, Cambridge, Mass. — Venturi Scott Brown & Associates, archt, Brunner/Cott & Associates, associated archt, Robert G. Neiley, Architects, restoration archt — July, BTS, pp. 94-99.
Libraries: Clayton Community Library, Clayton, Cali — Simon Martin-Vegue Winkelstein Moris, archt June BTS, pp. 74-77. Great Northwest Branch Library, San Antonio, Tex. — Lake/Flato Architects, archt — "A Warehouse for Books" — by Gerald Moorhead — June BTS, pp. 68-73. Mid-Valley Regional Library, Los Angeles — Killefer Flammang Purtill Architects, archt — June BTS, p. 102. Ross-University Hills Branch Library, Denver — Michael Brendle Architects, archt — June BTS, pp. 92-95. Science, Industry and Industry Library, The New York Public Library — Gwathmey Siegel & Associates Architects, archt Sept. BTS, pp. 84-91.
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turing the Romance of River Boats" — by Nayana Currimbhoy — Aug. RL, pp. 18-19. "Brighter Buildings for Great Britain" — by Adam Jackaway — Nov. RL, pp. 28-31. Centennial Olympic Park, Atlanta — "Light Games at the Olympics" — by Nayana Currimbhoy — Nov. RL, pp. 18-21. Coronado Shopping Mall, Albuquerque, N. M. — Brett Kratzer/Charles Aenlle/FRCH Architects, archt, Craig A. Roeder Associates, Inc., lighting dsgnr — by Nayana Currimbhoy — May RL, pp. 26-27. Eastridge Mall, San Jose, Calif — ELS/Elbasanai & Logan Architects, archt, Horton-Lees Lighting Design Inc., lighting dsgnr — May RL, pp. 24-25. The Edge Cafe, Colgate University, Hamiton, N. Y. — Einhorn Yaffee Prescott, Architecture and Engineering, archt and lighting dsgnr — "Lighting Lets the Mood Swing" — by Nayana Currimbhoy — Aug RL, pp. 16-17. Fong, Dr. Jimmy, Optometry, San Francisco — John Lum Architecture, archt, Illumination Design Collaborative, lighting dsgnr — "Eyewear Shops Show Architect's Double Vision" — by Nayana Currimbhoy — Aug. RL, pp. 20-21. Ford Centre for the Performing Arts, Vancouver, British Columbia — Moshe Safdie Associates Ltd., archt, Suzanne Powadiuk Designs, architectural lighting dsgnr, Jules Fisher/Joshua Dachs Associates, Inbc., theatrical lighting dsgnr — "A Theatrical Metaphor in Lights" — by Nayana Currimbhoy — Nov. RL, pp. 24-27. The Ionica Building, Cambridge, England — RH Partnership, archt, Cambridge Architectural Research Ltd., daylighting dsgnr — "Brighter Buildings for Great Britain" — by Adam Jackaway — Nov. RL, pp. 30-31. Jordan Hall, New England Conservatory of Music, Boston — Ann Beha Associates, archt, Charles Cosler Theatre Design, lighting dsgnr — Feb. RL, pp. 24-25. One Market Street Plaza, San Francisco — Cesar Pelli & Associates Architects, archt, Patri-Burlage-Merker, associate archt, Cline Bettridge Bernstein Lighting Design, lighting dsgnr — May RL, pp. 30-33. Padre Sierra Parish Church, Camarillo, Calif. — Albert C. Martin & Associates, archt, Architectural Lighting Design, lighting dsgnr — Feb. RL, pp. 14-17. Planet Hollywood, Walt Disney World, Orlando, Calif. — Rockwell Group, archt, Focus Lighting and Rockwell Group, lighting dsgnr — "Where Nostalgia Meets Sci-Fi" — by Nayana Currimbhoy — Feb. RL, pp. 18-23. PowerGen Headquarters, Coventry England — Bennetts Associates, archt — "Brighter Buildings for Great Britain" — by Adam Jackaway — Nov. RL, pp. 28-29. Saint Mary's Cathedral of the Immaculate Conception, Portland, Ore. — Thomas Hacker and Associates, archt, Interface Engineering, lighting dsgnr — "Divine Inspiration" — by Nayana Currimbhoy — Aug. RL, pp. 24-25. "Sculpting Nightscapes Out of the Darkness" — Wanda Jankowski — Nov. RL, pp. 22-23. Second Street Relighting, Phoenix, Ariz. — Freedman Tung & Bottomley, urban planner, Luminae Souter Lighting Design, lighting dsgnr — May RL, pp. 28-29. Urban Eyes Optometry, San Francisco — John Lum Architecture, archt, Light Source, lighting dsgnr — "Eyewear Shops Show Architect's Double Vision" — by Nayana Currimbhoy — Aug. RL, pp. 22-23.
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Luminae Souter Lighting Design, lighting dsgnr, Tung Freedman & Bottomley, urban planning — Second Street Relighting, Phoenix, Ariz. — May RL, pp. 28-29.

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Mack Architects, archt, Leo Parker, archt of record — Stremmel House, Reno, Nev. — Apr. BTS, pp. 72-79.
Maki and Associates, archt — Tokyo Church of Christ, Tokyo — "A Quiet Sanctuary by the Highway" — by Naomi R. Pollock.
Malin, Nadav — "Some Old and Some New Sick-Building Culprits" — Feb., pp. 36-39. "Quiet Progress in Managing Environmental Toxins" — Sept., pp. 48-51.
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Marchetto, Dean, & Associates, archt — Tonnelle Avenue Firehouse, North Bergen, N. J. — June BTS, p. 103.
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McNeece, Ltd.; MET Studios, designers — Queen Elizabeth 2, Southampton, England — Feb., BTS, pp. 98-99.
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Miller/Hull Partnership, archt — Island House: Tikamaya, Decatur Island, Wash. — Apr. BTS, pp. 80-83. Archt — Olympic College Shelton, Shelton, Wash. — "A True Community College" — by Sheri Olson — Nov., pp. 90-93.
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Morphosis, archt — Salick Health Care, Los Angeles — Feb., BTS, pp. 62-65.
Murray, Robert, and Kermit Baker — "Two Crystal Balls" — June, pp. 36-39.
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Nadel Architects, archt — Union Rescue Mission, Los Angeles — Nov. BTS, pp. 112-113.
Nadel, Barbara A. — "Health-Care Prognosis: Change" — June, pp. 43,114. "Prison Design: Elusive Opportunities in a Big Field" — Mar. BTS, p. 99.
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Odle, McGuire & Shook Corp., archt — Showers Center, Bloomington, Ind. — Feb. BTS, pp. 92-95.
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Olson, Sheri — "Balancing the Equation" (family leave) — Mar., pp. 24-27. "Fees: Wider Service Scope Promises Profits" — July, pp. 44-46. "Structure Both Revealed and Concealed" (wood details) — May, pp. 40-45. "A True Community College" — Olympic College Shelton, Shelton, Wash. — The Miller/Hull Partnership, archt — Nov., pp. 90-93.
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Manufacturers' Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 26-33
Miller/SQA Building, Holland, Mich.
William McDonough+Partners, Architects
Curtain wall and windows: Vistawall Architectural Products. Glazing: Viracon. Ballasted-membrane roof: Carlisle SynTec System. Mechanically fastened roof: Sarnafil. Brick: Glen-Gery. Interior doors: Steelcraft; Oshtemo Hill, Inc. (wood doors). Locksets: Corbin-Russwin. Hinges: Stanley. Closers: Norton. Exits: Von Duprin. Cabinet hardware: Häfele. Carpeting: Interface. Acoustic ceiling and suspension grid: Armstrong World Industries. Paints: American Formulating & Mfg.; Benjamin Moore & Co. (Pristine). Tile: Summitville Tile. Furnishings (throughout): SQA; Herman Miller. Upholstery: Deepa. Interior lighting: Lithonia (factory); Zumtobel (office space). Downlighting: Lightolier, Inc. Exterior luminaires: McGraw-Edison. Occupancy-activated light controls: Watt-Stopper.

Pages 34-39
3Com Building 500
Santa Clara, Calif.
Studios Architecture, Architect
Profiled-metal cladding: Robertson/Ceco. Curtain wall: Walters & Wolf. EIFS: Dryvit Systems, Inc. Glazing: PPG Industries, Glass Group. Fire-control doors: Cookson. Special doors: Openings, Inc. (Total Door). Acoustical ceiling: Armstrong World Industries. Grid: Chicago Metallic. Laminate surfaces: Abet-Laminati. Locksets: Schlage. Closers: Norton. Conductive resilient flooring: Forbo Industries, Inc. Carpeting: Prince Street. Office panel system: Teknion (Transit System). Indirect lighting: Peerless Lighting.

Pages 40-43
Northern Telecom Mission Park Facility,
Santa Clara, Calif.
Studios Architecture, Architect
Entry curtain wall: Walters & Wolf Glass. Cladding at entry: Metallic paint over EIFS. Aluminum windows and entrance: The Kawneer Co. (Trifab II 400). Glazing: PPG Industries, Glass Group. (Graylite, Solarbronze). Labeled glass: Technical Glass Products (Firelite). Barrel-vault skylights: O'Keeffe's. Interior railings: custom by architects. Special doors: Openings, Inc. (Total Door). Overhead coiling doors: Cookson Door Co. Locksets: Schlage Lock Co. Hinges: McKinney. Closers: LCN. Acoustical ceilings: Capaul (Vinylrock); Armstrong World Industries (Second Look II). Grid: Chicago Metallic. Corrugated-metal panel ceiling: Alpro Acoustics. Atrium paneling: Decoustics. Integral-color plaster: Area Code. Laminate surfaces; Nevamar. Office furniture: Steelcase; Herman Miller. Indirect lighting: Peerless Lighting.

Pages 44-49
Prince Street, Cartersville, Ga.
Thompson, Ventulett, Stainback & Associates, Architect
Yellow and blue brick: Boral Brick; Endicott Clay. Aluminum storefronts and entrance: Vistawall Architectural Products. Translucent corrugated fiberglass panels: Resolite. EPDM roof: Firestone Building Products. Roof-edge coping: MM system Glazing: PPG Industries, Glass Group. Dome and vault skylights: Naturalite/EPI Skylight Systems. Locksets and butt hinges: PDQ Industries, Inc. Pulls and cabinet hardware: Forms+Surfaces. Gri and acoustic ceilings: Armstong World Industries. Custom cabinetry: Pixie Caseworks. Opaque stains: Porter Paint. Linoleum flooring: Forbo Industries, Inc. Carpeting: Prince Street. Lounge seating: Archipelago. Standing lamps: Artemide, Inc. Conference seating: Herman Miller (Burdick Sconces: custom by architect. Direct/indirect ligh ing fixtures: Finelite.

Addendum

The point-supported glazing system designed for the Leipzig Trade Fair Center, Leipzig, Germany [RECORD, November 1996, pgs 80-89] was fabrica ed by MERO Raumstruktar, and is available in th United States from MERO Structures, Inc., Germantown, Wis.

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Rennie Mackintosh, with 250
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lrawings of his buildings,
urniture, textiles, and the
eassembled Ladies' Luncheon
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hrough February 23

An American Embassy in
Berlin" examines the recent com-
etition for the American
Embassy in the German capital.
Iodels and drawings by all semi-
nalists as well as the winners,
Ioore Ruble Yudell and Gruen
ssociates, are shown at the
Vational Building Muse-um,
Vashington, D.C. Call 202/
72-2448 or fax 202/272-2564.

Iarch 6-8

ix PIAs (Professional Interest
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arch 19-21

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mpetitions

Submissions to the biannual
dy Bruner Award for Excel-
ce in Urban Environment are due December 13. First-prize winner receives $50,000; honorariums of $1,000 go to each of four additional finalists. Contact Bruner/Cott & Associates for an application or more information at 130 Prospect St., Cambridge, Massachusetts 02139; phone 617/492-8400 or fax 617/876-4002.

◆ The Gypsum Association is holding an Excellence in Gypsum Board Design and Construction competition; entries are due December 31. Top awards of $3,000 go to each of the winning teams in non-residential and residential construction using gypsum board. Call 202/289-5440.

◆ The town of Vail, Colorado, is holding a juried competition for the design, renovation, and integration of a public-art project in a centrally located plaza. Project budget is $300,000. Deadline for submissions is January 6. Call 970/479-8900 for details.

◆ Entries to the Spectrum International Design Competition, sponsored by the Tile Promotion Board, are due by January 31. Designers, architects, ceramic-tile manufacturers, and others who have influenced the use of ceramic tile are eligible to enter. There is a grand prize of $2,500 for the most outstanding project, first prizes of $1,500, and awards of merit of $1,000 in residential and commercial categories. Call 800/495-5900 or fax 561/743-3160.

◆ The Little Bighorn Battlefield National Monument Advisory Committee is sponsoring a competition to design a monument in commemoration of the Indians who fought to preserve their land. The deadline for submissions is January 13. The first prize is $50,000 and two other prizes are $15,000 and $5,000 each. The jury includes Arthur Amiotte, artist; Paul Hutton, historian; Richard Pohl, landscape architect; Kevin Red Star, artist; and Dennis Sun Rhodes, architect. To register, send a check for $25 to Southwest Parks and Monument Association, Indian Memorial Design Competition, National Parks Service, IMFRA-RM.SSOO, P.O.B. 25287, Denver,

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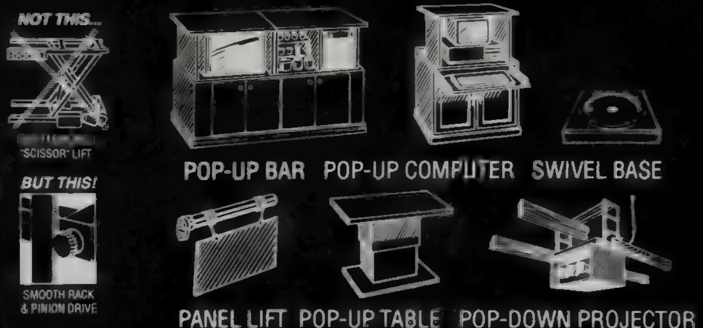

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The Crystal Palace succeeds where it was intended to—in the pages of a magazine and the abstract mindset of conceptualized technological expression—outside the day-to-day drudgery of the long-term consequences of reality. Contrast this (as RECORD did) with the next building in the issue—a small-budget academic building by Miller/Hull. It is quietly ingenious with an unperforated roof and even some insulation against the weather.

If "sustainability" means weak, if small budgets make for "compromised" buildings (as Campbell's words are applied to these projects) then perhaps guilty as charged is the verdict. But there is one reality we should think about: If a structure does not keep the weather out, is it a building or sculpture?
Duo Dickinson
Madison, Connecticut

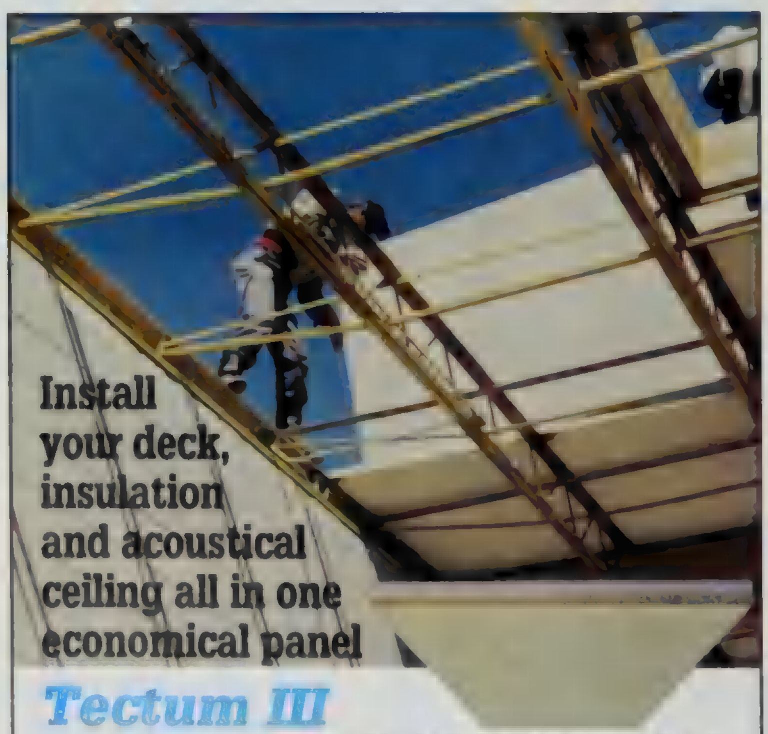
Robert Campbell's article was one of the more thought-provoking pieces of architectural journalism I have read in some time. I now look at American architects quite differently than I used to.
Many of the well-known and influential architects in this country during the first half of this century were not, in spirit, American. Walter Gropius and Mies van der Rohe matured in a very different architectural climate. Both were in their 50s when they arrived here, hardly blank slates. No matter this country's impact on them, they had a far greater impact on this country and the world. The influence from abroad continued through others such as Richard Neutra and Rudolf Schindler. While we debated styles, the Europeans debated how best to give form to the new world.

I am not ignoring Frank Lloyd Wright, who was America's greatest architect. Schindler and Neutra worked for Wright and it shows in their work. But Wright was agrarian while the Europeans were urban. Wright's work was filled with new ideas and forms; that is what got the attention of the Europeans. In the end, however, it was not Wright who taught the world how to redefine architecture. It was the Europeans.

By the early 1960s, some of their influence began to fade. Form began to lose its newness. Robert Venturi admired the early modernists, but saw the revolution was over. Perhaps Louis Kahn took over the title of *the* American architect after the death of Wright. The presence of the Europeans here would continue to be felt however. The question we really need to ask is not what happened to American architecture, but, rather, what is *American* about American architecture?
Frank L. Irte
Charlotte, North Carolina

Charles Moore goes on
I enjoyed Robert Ivy's review of Moore-Anderson's Washington State History Museum in Tacoma (RECORD , October 1996, pages 70-77). One comment stated: "Washington State History Museum can claim to be Charles Moore's last project." Now I am sure that you will soon hear from everyone that has an unbuilt Charles Moore project who believes theirs will be the last.

In 1991-2, Charles Moore designed an ingeniously simple 1,600-sq-ft home for my wife and me, to be built in Austin, Texas. Unfortu-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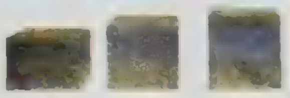

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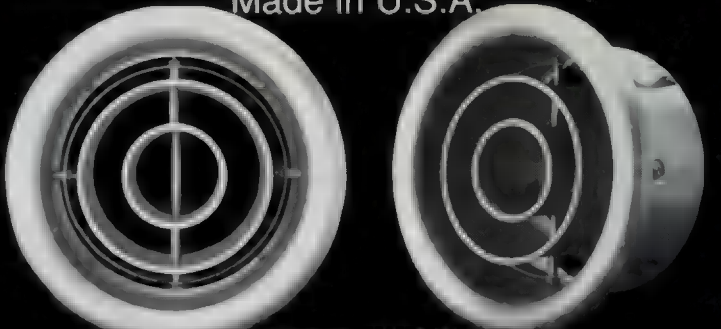

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ately Charles Moore died before we could btain financing. Now it appears we will get ur home built. So perhaps in the not-too-istant future, RECORD will have the pportunity to feature another last Charles Ioore project built with an impossibly small udget and inexpensive materials, but elightful details and a festive air.

ary and Linda Citron
'asadena, CA 91106

ad will in Peru

Iy first reaction to your two-page photo of he new U.S. Peruvian Embassy was "My god, hat an ugly building." The following pages nly reinforced that initial impression, as the etails are devoid of grace and human scale.

f the current embassy guidelines say Forget architecture as goodwill ambas-ador" and instead give the message "Keep ut," it is not just a sad reflection of our imes, it is a slap in the face to all who work or peace and cooperation among nations. 'his enormous ugly box towers like King Cong over the surrounding community, effec-ively destroying it. How would we react if nother country built such a monster in one f our neighborhoods? Even with high securi-y requirements, more sensitive solutions are ertainly possible. It sounds like the architect ied, but was forced by the client agency into is simplistic solution. A single firm can only o so much. What is the AIA doing to help e FBO see that an embassy can be beauti-l and respond to the scale of its context hile still being secure?

am ashamed that this building stands in nother nation's capital and can only imagine w much damage it does to the positive feel-gs the inhabitants may have had about us.

ynthia Richardson, AIA
ichardson Architecture & Planning
nacortes, WA 98221

ote: *ARCHITECTURAL RECORD may edit ters for errors, style, and length, taking re not to change meaning.*

alendar *continued from page [illegible]*

lorado 80226-0287. For information, call rbara-Sutteer at 800/969-2830 or send an nail to Barbara_Sutteer@nps.gov.

'or an international two-stage competition design the Oklahoma City Memorial is due February 10. The new structure will stand the site of the worst terrorist attack on S. soil—the bombing of the Alfred P. urrah Federal Building on April 19, 1995. Also included are a visitor center, which may be housed in an adjacent existing building. To register, send a letter requesting competition materials and a check for $25 to International Design Competition, Oklahoma City Memorial Foundation, 420 North Robinson Avenue, Oklahoma City, Oklahoma 73102. Call 405/748-748-0515 locally or 800/491-3822 elsewhere.

◆ Entries for the 1997 DuPont Benedictus Awards for Innovation in Architectural Laminated Glass are due March 3. The competition is sponsored by DuPont, the AIA, and the Association of Collegiate Schools of Architecture, and is supported by the International Union of Architects. This year's jury is comprised of Hugh Newell Jacobson, FAIA; Patricia Patkau, RAIC; and Christian de Portzamparc. Winners from around the world who demonstrate "significant" uses of laminated glass will be announced at the AIA Convention in New Orleans, May 16-18. For information, write Joanna Hanes-Lahr, 1100 New York Avenue, N.W., Washington D.C. 20005; call 202/393-5247; or send e-mail to haneslahr@mcimail.com.

◆ The Village of Plainfield, Illinois together with Plainfield Partners Commercial, Ltd., and the township Park District are holding a one-stage competition for the design of a 300-acre town center to be located directly across the Du Page River from the historic downtown. Registration costs $90 and closes March 30. Entries are due May 1. Prizes are $10,000, first, $5,000, second, and $2,500, third. To register, send check or money order to Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

◆ Entries are due on April 1 in the one-stage International Design Competition for the Development of David's Island located in Long Island Sound. The sponsor is the College of New Rochelle. Registration before January 15 costs $35 and $50 thereafter. Jurors include Diana Agrest, Diana Balmori, Deborah Dietsch, Laurie Hawkinson,Michael Manfredi, and Bradford Perkins. Prizes totaling $5,000 will be distributed among the winners whose entries will be exhibited at the New Rochelle Castle Gallery. For a competition brief, call the gallery at 914/654-5423.

Omission

The rendering of Anshen+Allen's Shanghai tower design [RECORD, October 1996, page 17] should have been attributed to Robert Watts Illustrator.

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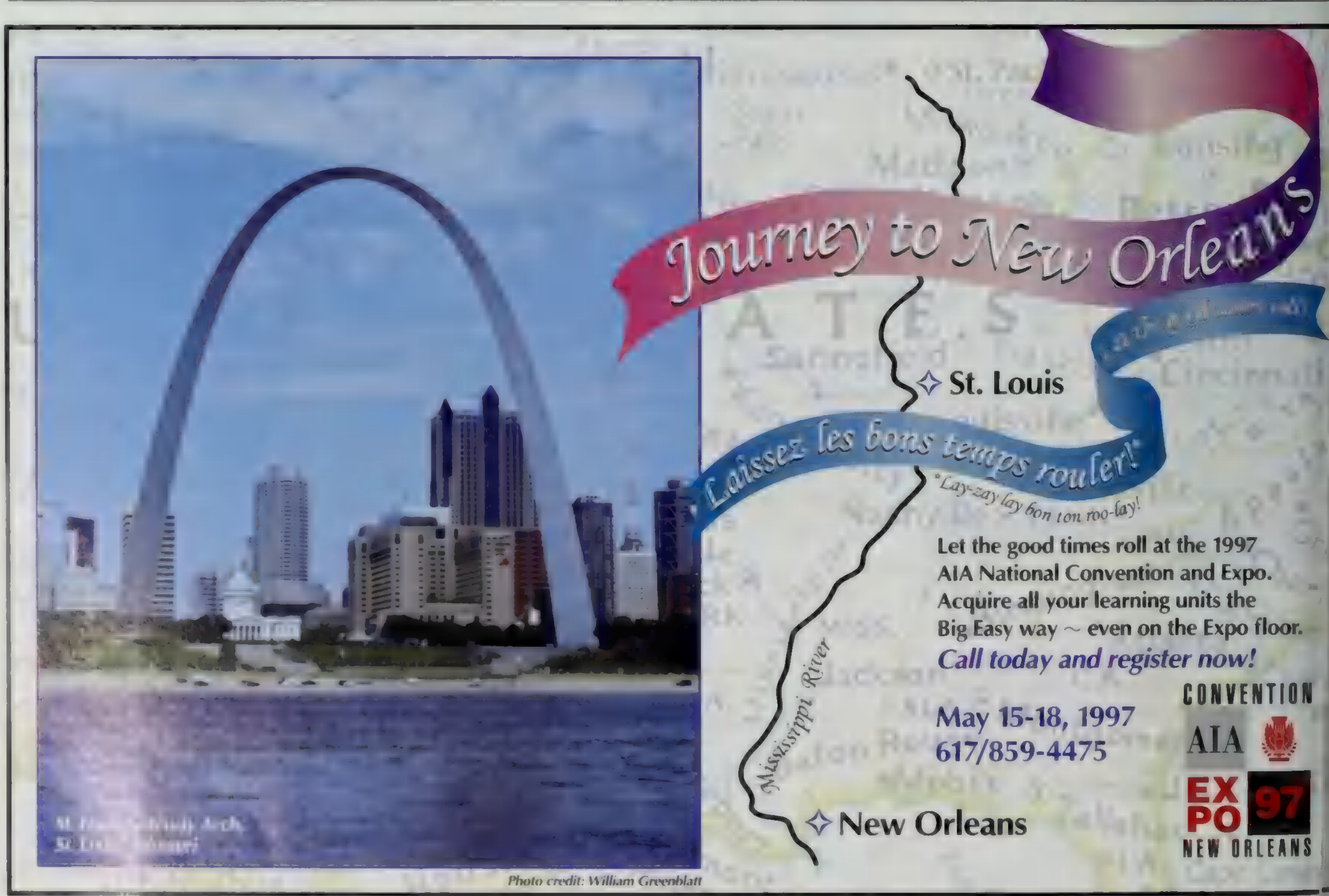

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Continued from page 51

functional, stark environments result. The challenge for laboratory designers today is to provide "maximum durability and flexibility at minimum cost, with an eye towards how those facilities can support growth and change," notes William Bernstein, MRAIC, AIA, principal of New York City-based William N. Bernstein & Associates.

On many campuses, outdated, unsafe science buildings remain on-line well beyond their useful lives. However, lab buildings designed over 30 years ago are being renovated to reflect current programmatic, functional, and esthetic needs. Old labs are increasingly decommissioned as technical spaces and are converted to soft-support areas. Additions or adjacent freestanding new buildings can accommodate new spaces, offering more intense utility and engineering needs. Older buildings become backfill, housing basic benchtop research and computer labs.

Role of computers

"The speed of science is faster than ever, with nore data, computers, more time on-line, and obotics doing repetitive functions. The lollars per square foot spent per person in aboratory research facilities is increasing in nany organizations," observes Copenhagen. rom a safety standpoint, researchers prefer eeping people out of lab environments and n clean, non-contaminated spaces.

omputers and instrumentation are playing arger roles in research. On-line access to ata, science journals, and even experiments neans researchers spend less time in braries and labs hunched over notebooks nd more time at computerized, ergonomical-/-designed office work stations. This shift ranslates into enhanced office environments uilt at far lower cost than would be possible y placing desks and office space within high-ost lab areas. Wet labs and desk bench space re decreasing, while lab-support and instrunent-room space is increasing.

lanning trends

leeting spaces and break rooms on each oor are no longer considered amenities, but tegral functions in both corporate and acadnic lab facilities. Commercial labs foster tellectual exchange among investigators by oviding parklike settings, waterfront ews, and indoor atriums to encourage social teraction and cross-fertilization of ideas. ve to six years ago, researchers asked for ore power and data connections. Today, ese features are integral to new facilities. ontinued emphasis on cellular and genetic research will not drive any immediate design changes. Other lab design trends include: centralizing core support facilities, such as glasswashing, in one building location; centralizing common equipment storage rooms on each floor; and evaluating high-tech equipment utilization, so researchers share big-ticket items like electron microscopes.

Getting more by renovating

While fewer government research grants and less federal funding is available for new construction, some money is more readily available for swing-space, phasing, and renovation projects. Yale University, for example, recently considered building a new 200,000 sq ft, $70-million lab facility versus retrofitting 20,000 sq ft of existing space with new mechanical systems for $7 million. The less-costly option won out.

"Renovated space is still functional, though not as flexible as new construction," Carmichael admits. Available land, project size, complexity, and rising costs will lead to more renovation. Alternatively, academic institutions can raise capital through fundraising, restructuring operations, and incurring debt, through tax-exempt bonds. ■

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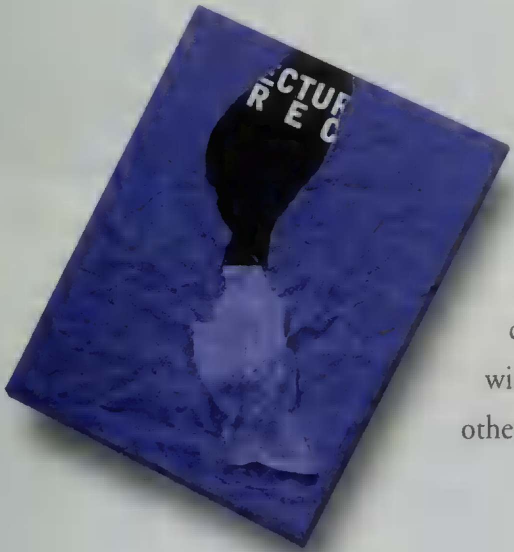

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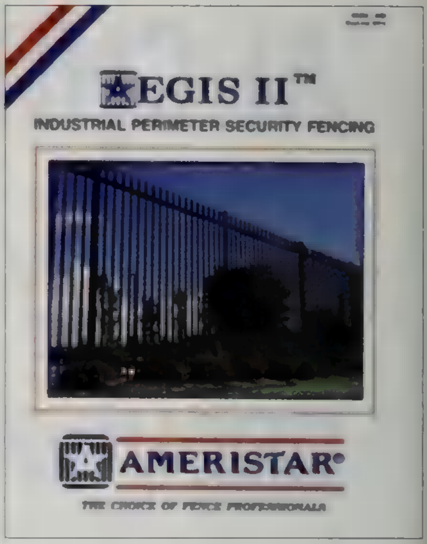
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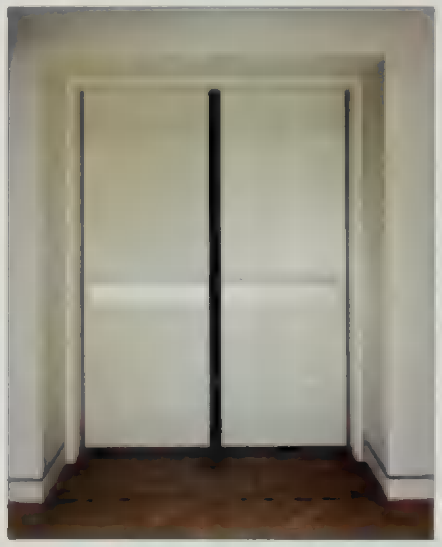
AMERISTAR®
THE CHOICE OF FENCE PROFESSIONALS

AMERISTAR®

Circle 52 on Inquiry card

TOTAL DOOR® SYSTEMS by OPENINGS®

The TOTAL DOOR® SYSTEM is an architect-designed integrated door assembly. It includes prefinished door panels and all hardware. Fire rated pairs do not require coordinators, vertical rods, astragals, flush bolts or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and metal faces available to 3 hours. Lifetime limited warranty on locks and panics. OPENINGS, 40 West Howard, Pontiac, MI 48342. 1-800-852-6660

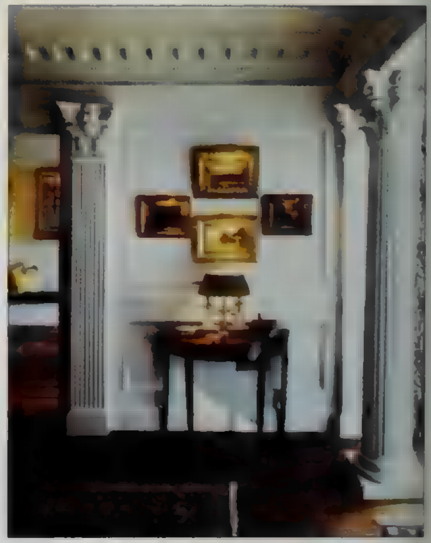


OPENINGS

Circle 53 on Inquiry card

Chadsworth's 1.800.Columns

A unique 44-page color "Idea Book" featuring an exciting collection of column projects from Classic to Contemporary for interior and exteriors. "Idea Book" Portfolio also includes Columns Product Portfolio. All this for just $10 plus $3 p/h from the column company selected #1 by Professional Builders readers. Product Portfolio $5, Wood fiberglass, Polyester, E.P.S. & Stone. Round square, octagonal with plain or fluted shafts. Job site delivery, worldwide shipping, competitive prices. 1-800-COLUMNS. 1-800-265-8667.



Chadsworth's

Circle 54 on Inquiry card

Trespa® Solid Composite Panels Three Product Lines

Toplab® chemically resistant laboratory grade panels for benchtops, work surfaces, shelves. Athlon® sanitary grades for toilet partitions, lockers, vanities. Meteon® UV colorfast grade for exterior cladding, soffits, fascias, balcony panels. All grades are durable, available in colors and proven performers in these applications. 1-800-4-TRESPA.

Hoechst Celanese Corp.

Circle 55 on Inquiry card

Concrete Waterproofing by Crystallization

Applied as a slurry coating, Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that 'plugs' the pores of the structure preventing water seepage. Xypex is ideal for use on the 'inside' of wet underground structures.

Xypex Chemical Co.

Circle 56 on Inquiry card

CATALOG PREVIEW '97

Introducing The New Alpha Collection

With 24 patterns to choose from ranging from the most basic vandal resistant Textures (shown right), to innovative Standards and our New Ultra Series. All patterns come in standard sheet sizes with border to border decorations, using distinctive finishes on a variety of metal surfaces for elevator doors and interiors, wall panels, column covers, and trim. Call 800-537-1127 / Fax 305-696-4064.

Surface Design

Circle 57 on Inquiry card

Decorative, Thin-Film Intumescent Fireproofing

Now certified for beams and columns for ratings up to 2 hours! A/D Firefilm permits the designer to use the appearance of exposed steel with the steel fully protected from fire. It is applied as a thin-film coating 0.4 to 3 mm (0.02 to 0.12 in.) thick. During a fire A/D Firefilm expands to form a meringue-like layer up to 100 mm thick, which insulates the steel from the fire. The topcoat is available in a wide choice of colours . A/D Fire Protection Systems, Inc. 416-292-2361.

AD FIREFILM
DECORATIVE, INTUMESCENT FIREPROOFING FOR STRUCTURAL STEEL
AD FIREFILM INTUMESCENT FIREPROOFING

A/D Fire Protection

Circle 58 on Inquiry card

Commercial Window Treatments

Springs Windows Fashions manufactures Bali, Graber and Nanik window treatments for commercial applications. Products include horizontals, verticals, pleated/cellular shades and drapery hardware. Now available, fire retardant cellular shade fabric for our Graber CrystalPleat shades. Architects and specification writers, call Spacefax (800-327-9798) for answers to echnical questions or specification sheets.

Springs Window

Circle 59 on Inquiry card

12 New Products Featured in 1997 Catalog

12 new products are introduced in Strong-Tie's '97 catalog, Wood Construction Connectors. A necessary reference for structural engineers, building officials, and architects, the catalog includes updated specifications, load charts, application drawings, and building code acceptance - plus information on holdown anchorage design, and available custom hanger options. ISO9001 Registered. For a copy of the 1997 catalog (C-97), write Simpson Strong-Tie Company, PO Box 10789, Pleasanton, CA 94588

SIMPSON
Strong-Tie
WOOD CONSTRUCTION CONNECTORS
Simpson is now ISO9001 Registered!

Simpson Strong-Tie

Circle 60 on Inquiry card

Accessible Lavatory Insulation

. full color catalog will
xplain the different
andy-Shield safety cov-
rs offered for the new or
etrofit projects that need
o comply with the
merican Disabilities Act.
he specific use, sample
pecifications, drawings
nd color choice are all
immarized in this easy to
nderstand catalog.

Plumberex

Circle 61 on Inquiry card

New Fireplace Tested as a Wall Furnace

Heat-N-Glo Fireplace Products has taken its direct-vent technology and incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) and has a AFUE (Annual Fuel Utilization Efficiency) rating of 63%. Also, the 6000 Supreme is standard with a variable regulator to adjust the flame and BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy. 13, Savage, MN 55378. 1-800-669-HEAT.

Heat-N-Glo

Circle 62 on Inquiry card

1997 Atlas™ Product Catalog

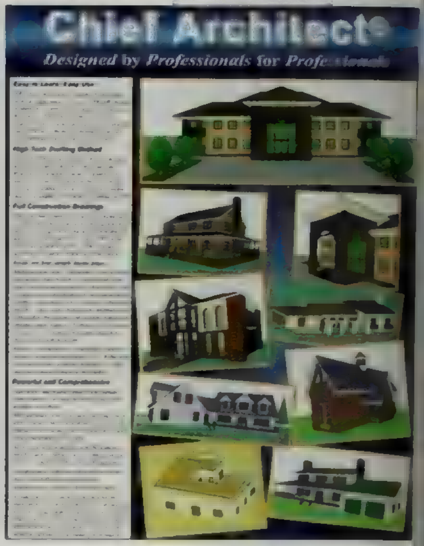
Atlas Door's new, 24-page product catalog has been completely redesigned and is available for distribution. All products are color and icon coded for easy reference including: rolling service doors, thermal doors, fire & life safety doors, counter shutters, grilles, and motor operators. General and specific design considerations are addressed including ASCE-7 wind load compliance. Contact Tim Rudd @ 800-282-2260, ext. 3566.

Atlas Door Corporation

Circle 63 on Inquiry card

Advanced Relational Technology, Inc.

Chief Architect proves that top quality architectural software can be easy to learn. Straight out of the box, Chief simplifies the process of creating full working drawings. Over 300,000 people worldwide prefer ART's architectural software with its full 3-D capabilities. Advanced Relational Technology, Inc. 3731 N. Ramsey Road, Suite 150, Coeur d'Alene, ID 83814. Phone: (800) 482-4433, Fax (208) 664-1316 E-mail: artchief@chiefarch.com - WWW: www.chiefarch.com



ART

Circle 64 on Inquiry card

Raymond Enkeboll Designs ©1996

Crafts an extensive array of Architectural elements carved in solid woods. 104 pg. Color Product Catalog, shows a selection of capitals, corbels, moldings, onlays, panels, etc. Stocked in Maple and Red Oak, available for immediate delivery. Spiral Bound catalog $20. Special binder version $30. Visa & MC welcome. Complimentary brochure available. Raymond Enkeboll Designs 16506 Avalon Blvd. AR12, Carson, CA 90746. Phone (310) 532-1400 Fax (310) 532-2042

Raymond Enkeboll

Circle [illegible] on Inquiry card

IBM CATIA/CADAM Solutions

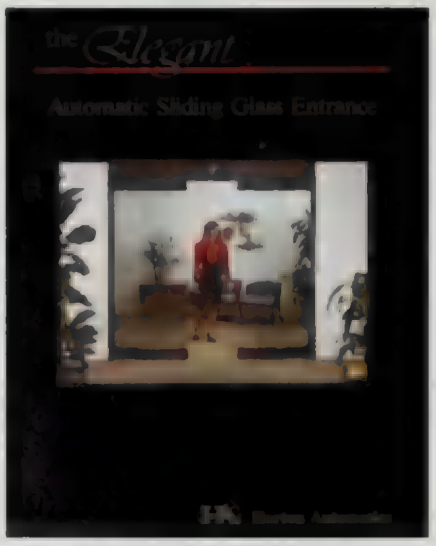
Let IBM's CATIA/CADAM AEC Plant Solutions (CCPlant) streamline your plant design, construction, and operation processes. CCplant provides plant owners, operators, engineering and construction firms access to engineering and design data across their businesses. For more information about CCPlant call 1-800-395-3339 or e-mail us at: peravage@vnet.ibm.com

IBM

Circle 66 on Inquiry card

Door Operators

Horton Automatic EasyAccess ™ Series 7000 and Series 4000 LE Automatic Swing Door Operators make complying with Americans With Disabilities Act "Easy" and "Accomplishable". These automatic swing door operators can be installed to most existing doors and require no structural modifications. Installation of either operator helps create an affordably priced barrier-free entrance. **Automatic operation with a push of a button.**



Horton Automatics

Circle 67 on Inquiry card

Decorative Grilles

Unusual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects & interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Avenue, Brooklyn, NY 11222.
800-521-4895.
Fax 718-349-2611

Register & Grille Mfg., Co

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CATALOG PREVIEW '97

Architectual Signage

s an industry leader for 30 ears, APCO understands the mportance of a building's ignage in creating a favorable and lasting impression. he company offers a diverse product line designed to neet architects' specific needs -- from interior and exterior sign systems, to displays, directories, signmaking oftware, and ADA compliant signs. APCO Graphics, nc. 388 Grant Street, SE, tlanta, GA 30312. Phone:-404)688-9000 Fax: (800)329-726.

APCO

Circle 69 on Inquiry card

Graffiti Proof Panels

Mapes Industries manufactures a complete line of architectural panels with a graffiti proof finish of porcelain enamel. The panels are available in both porcelain on aluminum or steel in a wide variety of colors. The panel applications include window replacement, curtain wall, soffit and ceiling projects. The panels are an ideal solution for high traffic/abuse areas such as schools and institutional buildings. For a free sample to test, please call toll free - 800-228-2391 or fax 800-737-6756.

Mapes Industries, Inc.

Circle 70 on Inquiry card

Rubber Flooring for the 21st Century

odge-Regupol Inc. (DRI) merged as the world leader n recycled rubber products echnology while developing full range of recycled rubber ooring for both commercial nd sports applications. DRI's ommercial line of rubber ooring, dist. by Gerbert Ltd, elivers exceptional resilience nd durability, exceeds ADA eq. for slip-resistance and eets designer's objectives for olorful and aesthetically leasing interior and exterior urfacing at a lower cost than onventional rubber flooring. 888-359-5466.

Dodge Regupol

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ADA Compliance Signage

INNERFACE makes it easier for you to meet the Americans With Disabilities Act (ADA) signage standards. INNERFACE offers (1) A variety of compliance signage, (2) National distribution (3) Solid 25 year history and (4) Economical, attractive, & highly functional interior and exterior signage. INNERFACE also offers a complete line of interior signage. For free literature, Please call (800) 445-4796.

Innerface

Circle 72 on Inquiry card

Skyfold Auto-Lift Wall Systems

yfold is a unique, vertically lding acoustical partition at neatly stores in the ceiling hen not in use. Skyfold does-t take up valuable floor ace for storage pockets. In e down position, it's is a two led, hard, rigid wall with ans C rating of 48. Skyfold is fully tomatic and doesn't require anual operation. Changes in e room or hall configuration n be achieved with a sim-e turn of a key. T.(514) 457-57. F.(514) 457-7111. Skyfold . of Railtech Ltd. 325 Lee e., Baie d'Urfe (Montreal), ebec H9X 3S3.

Skyfold

Circle 73 on Inquiry card

Reclaimed, Remilled. Remarkable

Vintage Lumber Co., Inc. has been manufacturing exceptional antique T&G plank flooring since 1973. Our extensive selection, consistent quality, on time delivery, and technical expertise is unequaled in the industry. For more info call 800-499-7859 or fax 301-845-6475. P.O. Box 104, Woodsboro, MD 21798

Vintage Lumber

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Wood Windows and Doors

For 75 years, Zeluck has served both architects and custom builders with architectural wood windows and doors unparalled for flexibility, quality and service. Zeluck offers a wide selection of glass and hardware, and timber from responsibly managed forests. Our triple hungs, European casements, tilt & turns, copper clad, bent units, bi-folding doors, lift-sliding doors and French doors are but a portion of our product line. Whether a custom home, hotel, institution or historical project, we can make your fantasy a reality. For a free catalog, call 800-233-0101 or 718-251-8060.

Zeluck Architectural Windows & Doors

Circle 75 on Inquiry card

Worthington Group

Research and development has allowed Worthington Group to fill builders' needs with leading products in each category. Products are statically chosen for endurance, precision, ease of installation and price. Columns, Balustrading, Mantels, Moulding, Turnposts, Pediments, Medallions and more. Call for our catalog. Job site delivery and technical support a phone call away. Call 1-800-872-1608.

Worthington Group

Circle 76 on Inquiry card

FRT Wood & Building Codes

"Reference Guide for designing with fire retardant treated wood" outlines code-compliant applications of FRT wood. This includes the National, Standard, Uniform, and CABO codes. The guide also covers design properties, test standards, identification, and specification, and describes the Dricon® brand. Hickson Corp., 1955 Lake Park Dr., Suite 250, Smyrna, GA 30080. Tel 404-362-3970.

Hickson Corp.

Circle 77 on Inquiry card

Mapei Corporation USA

Count on MAPEI to provide you with ECO products that are technologically advanced, solvent-free and really work. The new Floor covering Installation Products Catalog features a complete line of solvent-free floorcovering adhesives for vinyl, carpet and hardwood installations. For more information contact MAPEI's Customer Service at 1-800-42-MAPEI or visit our Web Site at http://www.mapei.com.

Mapei Corp.

Circle 78 on Inquiry card

Fire Retardants and Preservatives

New 12-page Sweet's catalog features Pyro-Guard® interior type fire retardant lumber and plywood for roof systems and other interior structural uses. Exterior Fire-X® FRT lumber and plywood for decks, balconies, siding and other exterior uses and CCA/ACZA [illegible] preservative treated lumber and plywood [illegible] [illegible] [illegible]. After [illegible] from Hoover Treated Wood Products Inc., the [illegible] largest producer of fire retardant treated wood.

Hoover, Inc.

Circle 79 on Inquiry card

Catalog of Roofing Publications & Audiovisuals

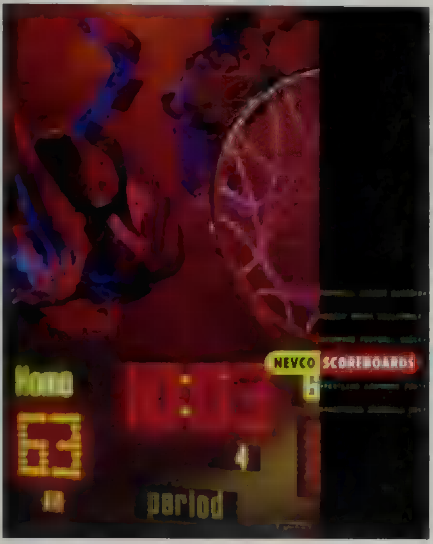
The National Roofing Contractors Association has more than 90 roofing-related products, including the 1,858-page NRCA Roofing and Waterproofing Manual-Fourth Edition and the NRCA Construction Details on CD-ROM in .DWG and .DFX formats. For a free catalog, contact NRCA Marketing Services, 10255 W. Higgins Road, Suite 600, Rosemont, IL 60018, (800) 323-9545.

National Roofing

Circle 80 on Inquiry card

Scoreboards

evco Scoreboard ompany has ben manfacturing scoreboards ɔr sports for over 60 ears. The latest Nevco ɔoreboard features re: UL Listed, CSA ertified, 5 Year uarantee, the univerıl MPC-4 control and '10th second timing., all 800-851-4040 or fax 18) 664-0398 for a free atalog.



Nevco Scoreboard Co.

Circle 81 on Inquiry card

The Opening Glass Wall

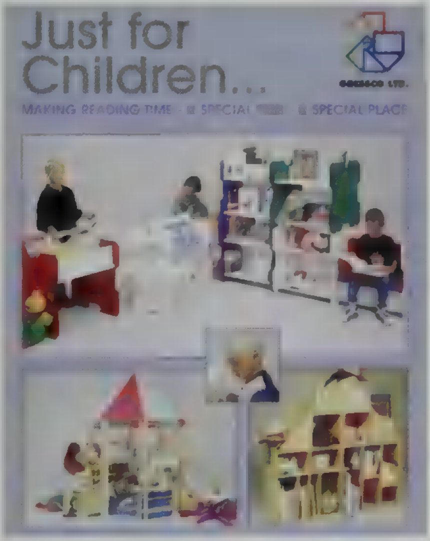
Expand space with indoor/outdoor areas. Increase business with large, inviting entrances. The Opening Glass Wall, the exterior folding French door system, makes openings up to twenty feet wide possible, while offering an engineered system with excellent weathertightness, high security, ease of operation, and quality wood or aluminum framed construction. Ideal for both residential and commercial applications. Call 1-800-873-5673. Fax 415-383-0312.

Nana Wall Systems, Inc.

Circle 82 on Inquiry card

Special Areas "Just for Children"

?ESSCO, Ltd. introduces a new atalog, "Just for Children..." ·aturing KinderSystem,)G, Modula S®, Verona ·elving, and Giant Animal ɔor Cushions to help you an and create the envinment children will love. so a full line catalog of rary displayers and media ɔrage units is available. Call ?ESSCO for your FREE catag 800/345-3480. Find us on e at http://www.gressɔltd.com.



Gressco, Ltd.

Circle 83 on Inquiry card

Conwed Naturalines™ Wood Wall [redacted] Ceiling Panels

Conwed's NaturaLines custom wood wall and ceiling products enhance any design with the warmth and beauty of natural wood. Utilizing expert craftsmanship, linear, louver, cellular, and coffer styles are available as design solutions for schools, medical centers, offices, restaurants and banks. Conwed Designscape, 1205 Worden Avenue E, Ladysmith, WI 54848, 800-932-2383. Fax 800-833-4798.

Conwed Designscape

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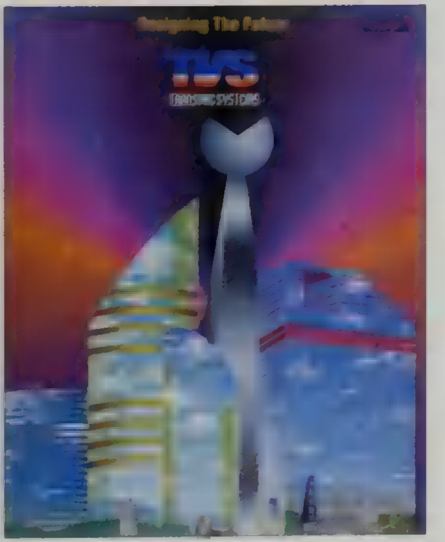
ˌUTOMATED VACUUM TRANSPORT SYSTEMS

ıaste and/or Soiled Linen

erfect for large hospitals nd similar buildings that ɜrve thousands of people
ıprove the building environent, management, and aintenance
ıll-vacuum and gravity/ ɔcuum technology
ustom design each system building specifications

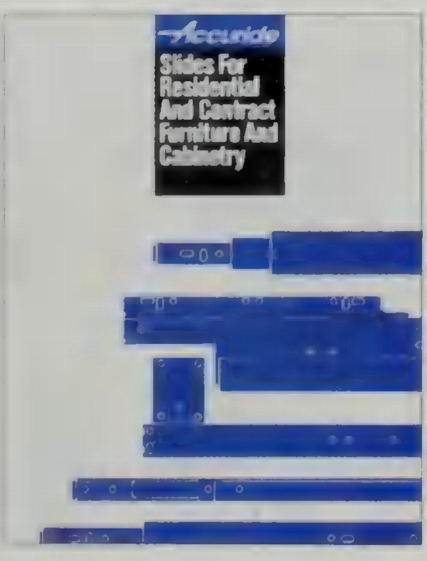


TRANSVAC SYSTEM INC.

Circle 85 on Inquiry card

Enhance the Quality of Casework

Accuride offers a variety of superior slides-perfect for lab casework, residential and office drawers. Archi-tectural support available includes suggested specification wording, specification representatives and a complete binder of slides for drawers, specialty applications and retracting pocket doors. Request your free catalog. For more information: (310) 903-0200.



Accuride

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Ornamental Poles

When do Sternberg decorative poles do more than hold up light fixtures? When they hold traffic signals, entrance archways, street signs and, of course, banners. This new 4-color bro-chure shows a wide variety of uses for ornamental poles and vintage street lighting, including cobra heads with a difference. Send for this brochure plus our 72-page, 4-color catalog today. Sternberg Vintage Lighting, 7401 Oak Park Ave., Niles, IL 60714. Tel. 847-588-3400, Fax 847-588-3440.

Sternberg

Circle 87 on Inquiry card

McKinnon & Harris, Inc.

Offers an electric collection of classically-inspired wrought iron and aluminum garden furniture for the American landscape. Handcrafted at their Virginia ironworks and powder coated for year-round exterior use. Stately garden furniture of exceptional design and craftsmanship. Shown: the McNeill Arm Chairs and Scroll-Footed Table with Adams Top. Catalogue available (804) 358-2385.

McKinnon & Harris, Inc.

Circle [illegible] on Inquiry card

Tuflex Rubber Flooring

Highest quality rubber flooring manufactured in 3/8'-thick, 27' square tiles and 21 contemporary designs. Ideally suited for areas exposed to weights, heavy machinery, golf spikes, ice blades or other significant wear and tear. Life span as long as 10-15+ years. Highly resilient and durable, virtually impervious to pitting, excellent traction, comfortable under foot, easy maintenance, epoxy -bonded to the sub-floor to form a seamless, sanitary surface. Call 800-543-0390.

Tufflex Rubber Flooring

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Rugged Intercom Indoors or Out

ADCO intercoms give CLEAR voice communication despite outside interference in noisy work area. No bleed or popping/crackling noises. Easily installed. Capabilities include: splicing into existing systems, selective switching systems and much more. TAILORED TO YOUR SITE'S NEEDS. Works in temps ranging from MINUS 50 degrees F. to PLUS 150 degrees F. Pick-up is extremely sensitive. ATKINSON DYNAMICS, 405 ECCLES AVE., SOUTH SAN FRANCISCO, CA 94080-1964. TELE:415/583-9845, FAX: 415/876-0111.

ATKINSON DYNAMICS
COMMUNICATIONS FOR INDUSTRY
HEAVY-DUTY INDUSTRIAL INTERCOMS
DESIGNED FOR:
HIGH NOISE AREAS
WET OR CORROSIVE CONDITIONS
ROUGH USAGE

Atkinson Dynamics

Circle 90 on Inquiry card

For labs & clean-rooms New Dowcraft TwinWall

Twin Wall is custom-designed for scientific research and hi-tech manufacturing facilities. Clean lines, durable finishes, optional filler cores permit Twin Wall to perform in categories to Class 10. Acoustical rating STC 41 up. Self supporting steel walls shipped ready to install. Heights up to 16 ft. Send for new brochure. Dowcraft Corporation.

Dowcraft Corporation

Circle 91 on Inquiry card

Arsco Mfg. Company

Manufacturers of custom metal cabinetry specializing in: Radiator enclosures for steam & hot water systems. Fin tube (baseboard) heating replacement covers. Fan coil replacement covers. Bookcases & shelving for schools. In business since 1934 serving residential, commercial public & institutional building owners & renovators. For a free brochure 1-800-543-7040.

Arsco Mfg. Company

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CATALOG PREVIEW '97

Soffi-Steel™ System

**The SOFFI-STEEL™ SYSTEM IS
AVAILABLE FOR COMMER-
CIAL AND INSTITUTIONAL
APPLICATIONS**. A pre-fabri-
cated, rugged, snap-on soffit
with an attractive appear-
ance and quick, clean instal-
ation. Commercial Soffi-
Steel for hospitals, dormito-
ies, apartments, etc., and
he Institutional Soffi-Steel sys-
em for jails and prisons.
Custom sizes, shapes, and fin-
shes. GRICE ENGINEERING,
nc., P.O. Box 8037, Janesville,
WI 53547-8037. Toll-free #:
300-800-3213 / Fax #: 608-
757-1452.

The
SOFFI-STEEL
SYSTEM
Custom Fabricated Covering for All Your Fire Sprinkler Piping, Electrical, and Plumbing Needs.
COMMERCIAL

GRICE ENGINEERING, INC.

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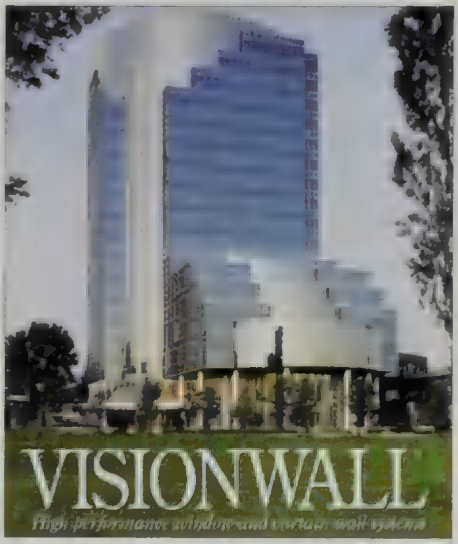
High Performance Window & Curtain Wall Systems

With its new 3-Element glazing unit and frame, Visionwall Technologies Inc. now offers high performance windows with insulation values from R3 to R7. As with the original system, this new product line features low shading coefficients, superior condensation resistance and excellent sound attenuation. Visionwall® systems are custom engineered and are available in window, curtain wall and sloped glazing configurations. To find out how Visionwall can be used in your design, call 1-403-451-4000 Ext. 234.



Visionwall Tech.

Circle 94 on Inquiry card

Thresholds/Weatherstripping / Continuous Hinges

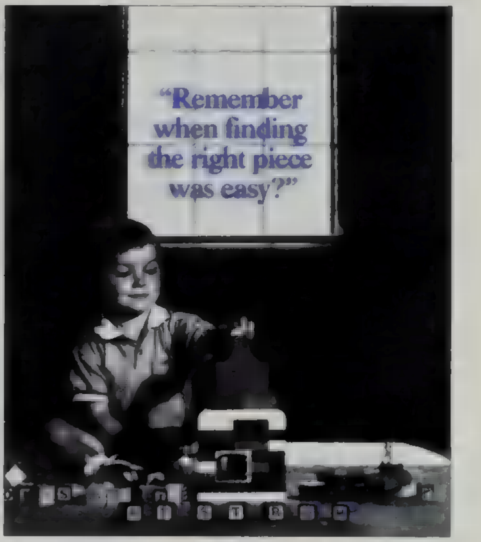
Pemko's 1995 full-line catalog
lustrates many fire labeled,
moke labeled, barrier-free
ccess, sound tested, and
ustom fabricated threshold
nd weatherstripping prod-
cts. New products include:
atented ADA compliant
amp thresholds,
emkoHinge™ - patented
ontinuous geared aluminum
inges, low-closing-force
eversible automatic door
ottoms, nylon brush weath-
rstripping, and locking astra-
als.

PEMKO

Circle 95 on Inquiry card

New Nystrom Architectural Catalog

Nystrom Products Company has released the latest version of its architectural catalog. The easy to read format makes this the ideal desktop reference for specification information on access doors, floor hatches, and roof hatches. This catalog covers the use of all these products in fire rated applications. For additional information contact Nystrom direct at 1-800-547-2635.



Nystrom Products Co.

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Senergy's New Aurora Stone Finish

e Senergy Division of Harris
ecialty Chemicals, Inc.
troduces Aurora Stone Finish
r EIFS, stucco and masonry.
urora Stone Finish replicates
e appearance of granite or
arble, and is available in
elve standard colors.
crylic-based Aurora Stone
ish is spray-applied, and is
o suitable for interior appli-
tions.

Senergy

Circle 97 on Inquiry card

Double Action Doors

Eliason has announced the availability of a new 1997 Easy Swing Door Price/Spec catalog. Doors are illustrated in full color with complete specifications and application data. Easy opening and safe, gentle, automatic time delay closing are features desireable in busy retail outlets. Doors are sold direct and the bound catalog is sent at no charge. Eliason Corporation P.O. Box 2128, Kalamazoo, MI 49003 TEL: 800-828-3655 - FAX: 800-828-3577.

Eliason Corporation

Circle 98 on Inquiry card

Amico Security Mesh™

SECURITY MESH is designed to act as a penetration barrier behind plaster or drywall finishes in either walls or ceilings. It is made by simultaneously cutting and stretching a solid sheet of steel...making Security Mesh one continuous sheet that will not unravel at the strands. Wherever security is critical...SECURITY MESH is your answer. Contact AMICO at 1-800-366-2642.

Amico

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The Xotel Chair 1996 IIDA Award Winner

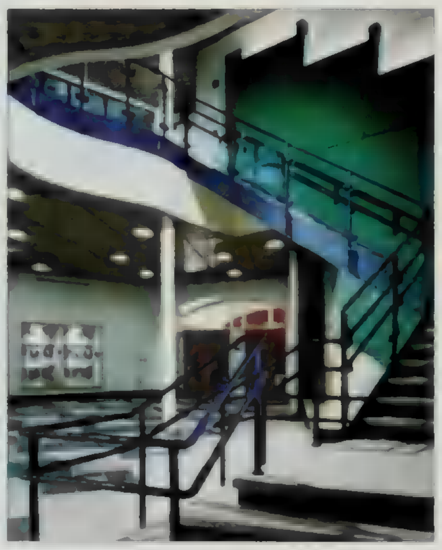
Brian Kane developed a method of shrink-wrapping Xorel fabric over a injection molded, ridged urethane shell. The Xorel Chair offers comfort, high traffic durability, and self healing, cleanable upholstery. $550 list. For a brochure and local representative: 800-727-6770.

Carnegie

Circle 100 on Inquiry card

W&W Sales Ltd.

NT Normbau Nylon Railing Systems by W&W come in standard and custom designs to suit virtually any application. They're easy to clean, sanitary and never need repainting. NT Nombau rails are available in sixteen beautiful colors. Round, friendly shape complies with all ADA requirements. All system components are connected internally ensuring a neat, safe and secure installation.



W&W Sales Ltd.

Circle 101 on Inquiry card

National Gypsum Hi-Impact Wallboard™

Gold Bond®'s new 5/8" Fire-Shield Hi-Impact gypsum wallboard provides institutions and high traffic, high abuse areas with an unbreakable wall installation. Bonded with General Electric's Lexan® polycarbonate film in three different thicknesses, Hi-Impact gypsum wallboard provides the degree of impact/penetration resistance needed. For more information, access our Internet home page at http://www.national-gypsum.com.

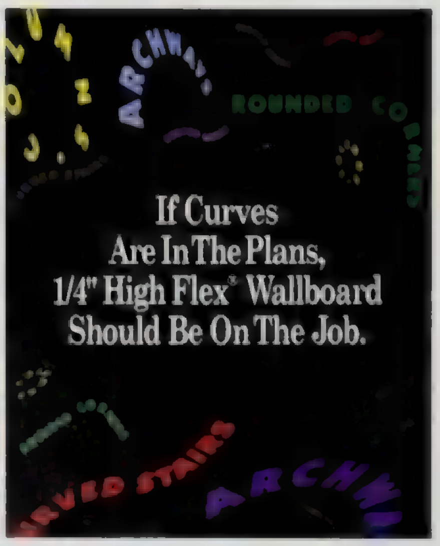
Before we introduced our new Hi-Impact wallboard,
we ran it by an expert

National Gypsum

Circle 102 on Inquiry card

National Gypsum Flexible Wallboard

New Gold Band® 1/4" High Flex gypsum wallboard saves you time and money on the curves. For tight radius construction such as curved walls, stairways, arches and columns, High Flex eliminates the usual on-the-job scoring, cutting and plaster finishing of standard drywall. Now you can access our Internet home page at http://www.national-gypsum.com.

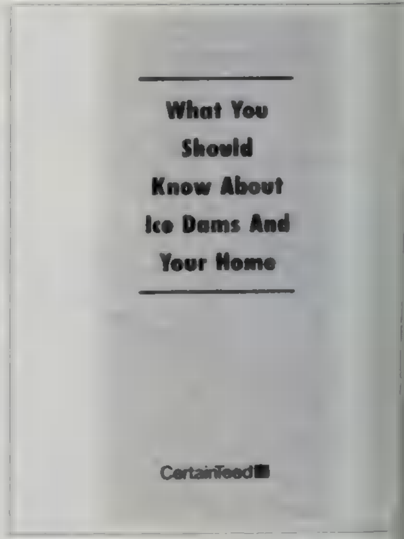

ARCHWAYS
ROUNDED CORNERS
CURVED STAIRS
ARCHWA
If Curves Are In The Plans, 1/4" High Flex* Wallboard Should Be On The Job.

National Gypsum

Circle 103 on Inquiry card

CertainTeed

CertainTeed offers a new Consumer Brochure on Ice Dams and other Attic Problems. "What you should know about Ice Dams and Your Home" from CertainTeed explains what an Ice dam is and the damage it can cause to attics, sidewalks and ceilings. Also offers tips on avoiding water seepage under a home's roof deck. In the attic and in the interior at the home. To receive a copy or product specs on any of CertainTeed's roofing, insulation or ventilation products, call 1-800-233-8990.



What You Should Know About Ice Dams And Your Home

CertainTeed

CertainTeed

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CATALOG PREVIEW '97

Bilco 1997 Catalog

ilco Company announces he availability of its full 1997 catalog featuring roof scutles, fire vents, floor, vault and idewalk doors and the adderUp (R) safety post. This 24-page catalog also features the company's new fire ated floor door and new Odor Resistant floor/vault door. Catalog is complete vith cross sectional details and architectural specifications on all products.

Bilco
Setting the Standard
Since 1926
Ladder Safety Posts · Roof Scuttles · Automatic Fire Vents · Floor, Vault and Sidewalk Doors · Ceiling Access Doors · Basement Doors

The Bilco Company

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Peerless Jumbo® Mounts

The Jumbo® TV Wall and Ceiling Mounts feature adjustable height, width, tilt and swivel. The adjustable bottom mounting plate allows the fine-tunning of gravity in relation to the degree of tilt, while top clamps provide add'l stability. Constructed of heavy gauge steel with durable epoxy finish, the mounts are available in several sizes to accommodate 13" to 42" screens and 125 lb. to 300 lb. weight loads. All models are UL listed and CSA certified. Several models are OSHPD approved. Optional VCR attachments and tamper-resistant security fasteners available.

Peerless Industries

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Commercial Lighting

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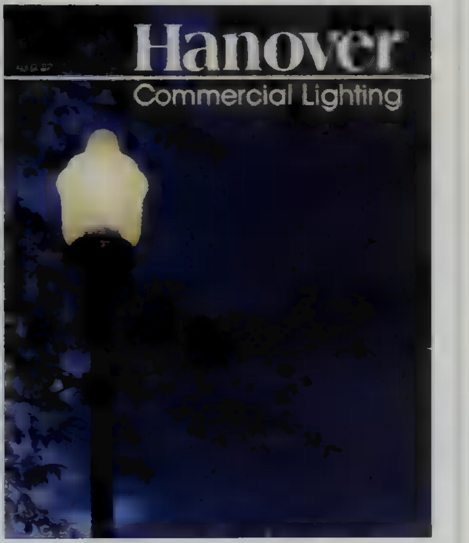

Hanover Lantern

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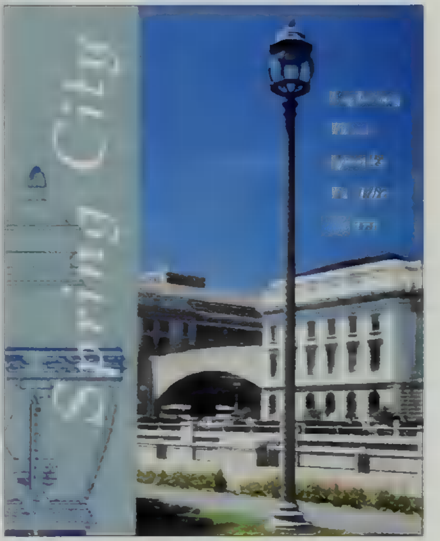
Widest Selection of Outdoor Lighting

Cast iron is universally acknowledged to be the best material for outdoor lighting standards: beautiful, durable, and virtually maintenance-free. Spring City's full-color, 8-page catalog shows traditional cast iron lighting posts, bollards, traffic control pieces, and more from the country's widest selection. Spring City Electrical Manufacturing Company, Spring City, PA



Spring City Electrical

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Porcelain Signage
The Jewel of Signs

his timeless sign medium ombines classic beauty with credible durability. Precise ixtures of glass and oxides e fused to a steel base to rm a color fast sign panel th unsurpassed longevity nd vandal resistance. plore our exclusive finishes, esign and color options. scover Enameltec Value. e create the spirit or your esign. Enameltec 800-663-43.

Enameltec

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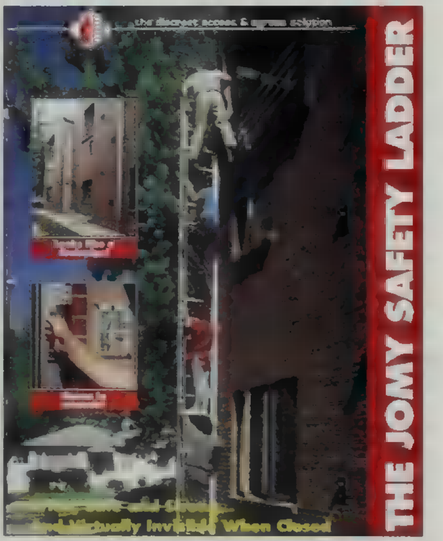
Security requirements, space constraints and aesthetic considerations are a few of the problem-solving applications for the JOMY Safety Ladder. The ladder's discrete appearance makes it an ideal solution for access and egress requirements. The ladder looks like a drainpipe when closed, but opens to a heavy-duty ladder with slip-resistant rungs and a safety rail. Jomy Safety Ladder Co., 1728 18th St., Ste.201, Boulder, CO 80302.
Phone 800-255-2591.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THE JOMY SAFETY LADDER
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Jomy Safety Ladder

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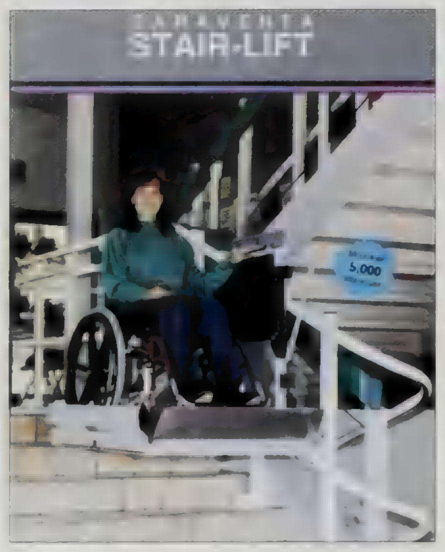
Unlimited access to innovative designs

Specifically designed to withstand the rigors of public use, Garaventa Stair-Lift is ideal for a variety of indoor and outdoor applications. With thousands of lifts installed around the world, Garaventa is the number one choice in stairway access. Call for your free information package today. 1-800-663-6556



Garaventa

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LAV-GUARD™ Undersink Protective Pipe Covers

Lav-Guard ™ insulation kits by TRUEBRO, Inc. thoroughly cover waste and supply lines under accessible lavatories. Universally sized for new construction or retrofit, our kits are engineered for rugged durability from antimicrobial vinyl. The Lav-Guard ™ kits are aesthetically pleasing and comply with ADA regulations.

LAV GUARD
The original ADA-engineered, designer-style protective undersink drain piping and angle valve supply covers.
TRUEBRO

Truebro, Inc.

Circle 112 on Inquiry card

Blue Giant Dock Equipment

The dock equip. brochure from Blue Giant incorporates architectural specifications with typical application descriptions and detailed feature photos. Location photos show the many and varied types of loading dock equip. mfgd. by Blue Giant and installed around the globe. Blue Giant USA Corp. Gary Whitten 204 Industrial Park Dr., Pell City, AL 35125 T. (205) 884-1500 F. (205) 884-1504 Canada Ltd. Ken Malczyk 85 Heart Lake Rd S., Brampton, Ontario L6W 3K2. Can T. (905) 457-3900 F.-(905)457-2313. Europe Ltd. Keith Day POB 35. Pershore WR10 2YR, England. T. (01386) 555804 F. (01386) 555803.

Blue Giant

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Musson Rubber Co.

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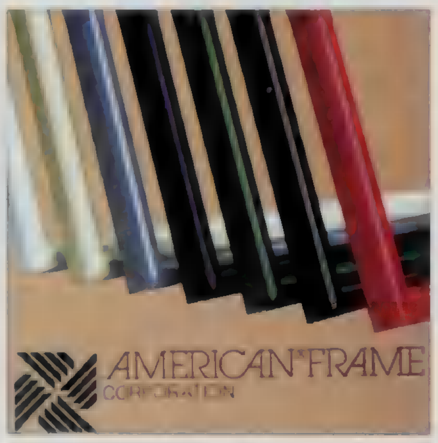

American Frame

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Hunter Douglas '97 Sweet's Catalog

Hunter Douglas' new 1997 Sweet's Catalog presents a broad and enhanced product line that offers increasingly versatile design applications to architects and designers. Each section contains application information, CAD drawings, and color installation photos. Call 1-800-366-4327.

Hunter Douglas

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CATALOG PREVIEW '97

Roof Penetration for New & Retrofit

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pecify rooftop equipment,
contact Roof Products, Inc..
They have the knowledge,
experience and the techni-
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applications for a leak-free,
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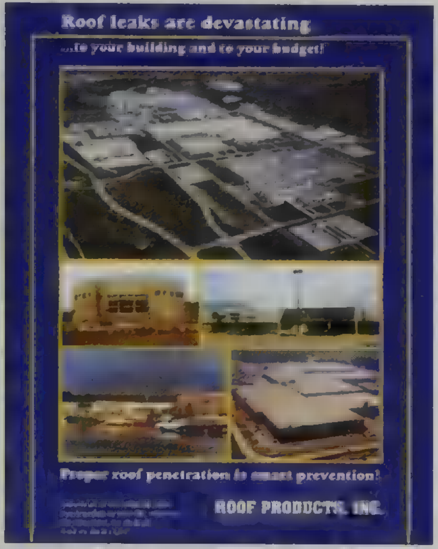
Roof leaks are devastating
...to your building and to your budget!
Proper roof penetration is smart prevention!
ROOF PRODUCTS, INC.

Roof Products, Inc.

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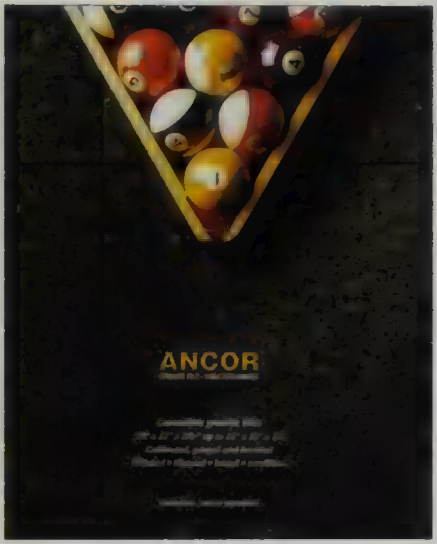

Ancor Granite Tile

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H-Window

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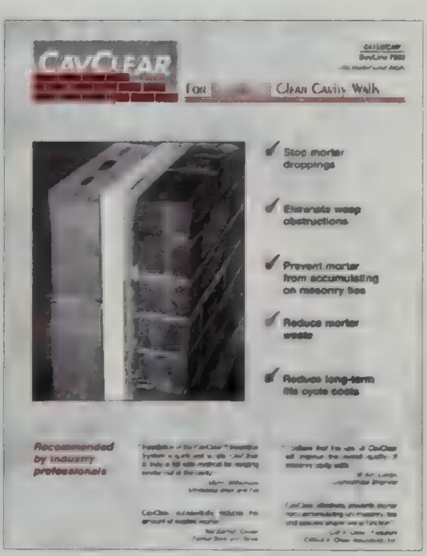
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Jacuzzi Whirlpool Bath

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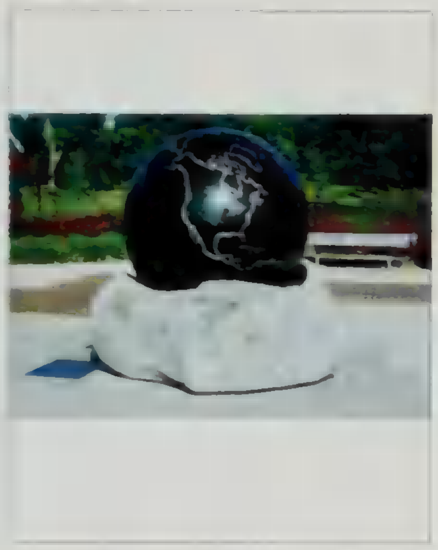

Quarry Line, Inc.

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"Ellen's brackets", an anodized -aluminum shelving system designed by M. Ali Tayar, provides an elegant alternative to existing bracket-and-track systems Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8-in. thick and 10-in. deep. Wall-mounted tracks permit 1 1/2-in. adjustment of wood, glass or plexiglass shelves. For more info phone Parallel Design (212) 989-4959/ Fax (212) 989-4977.

Parallel Design

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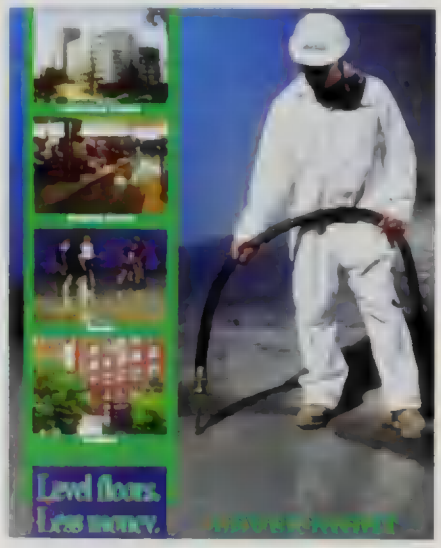

Maxxon Corp.

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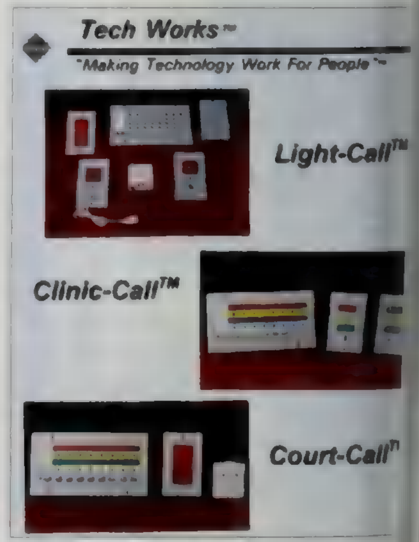

Tech Works

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Accent on Architecture focuses on Community

Accent on Architecture communicates the power of architecture to the American people.

The Accent is on Community

A television program, *Back from the Brink: Saving America's Cities by Design*, has been produced for broadcast by PBS stations beginning in 1996. This program explores how citizens changed the future of three cities by taking responsibility for how their communities looked and worked.

The American Architectural Foundation is working with local architecture organizations across the country to develop innovative public education programming that will take the lessons from *Back from the Brink* and adapt them to individual communities.

The Accent is on Outreach

Grants supporting public education programs on the 1996 theme of excellence in public architecture have been presented to AIA components in Baltimore, Kansas City, Orange County, and South Carolina, and to architectural foundations in Oregon and Tulsa.

The Accent is on Excellence

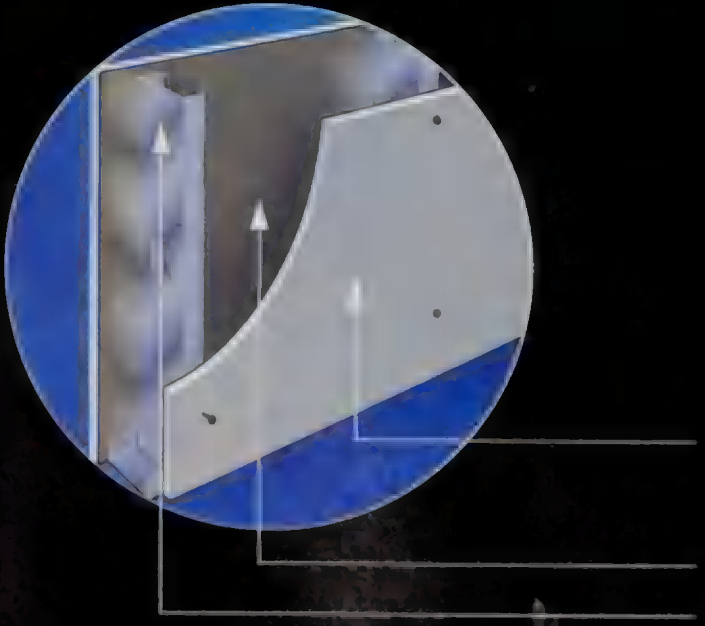
The most prestigious public event in American architecture, the annual Accent on Architecture gala, unites the public with the worlds of architecture, business, politics, and construction.

Accent on Architecture is a national, year-long public education program of The American Architectural Foundation and The American Institute of Architects and is funded entirely through the contributions of corporations, institutions, and individuals, none more generous than The McGraw-Hill Construction Information Group.

For more information write to The American Architectural Foundation, 1735 New York Avenue, NW, Washington, DC 20006

Before we introduced our new **Hi-Impact**™ wallboard, we ran it by an expert.

When it comes to impact resistant walls, our new Hi-Impact wallboard can really take it. It's a versatile alternative to concrete block used in schools, public housing and healthcare facilities. Hi-Impact is less labor intensive to install and accommodates more decorating options than other wall systems. Backed with Lexan® film, it's available in three degrees of impact resistance to fit your needs.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Circle 45 on inquiry card

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*Lexan is a registered trademark of General Electric Company.

AIA/Architectural Record Continuing Education

This month's installment of the ARCHITECTURAL RECORD/AIA Continu-ng Education Series covers the entire Building Types Study in this issue: Knowledge-based Manufacturing. To focus your study, use the learning objectives on page **23.** Read the stories, complete the questions below, and check your answers (page **166**). AIA members may fill out the self-report form and send it in for two AIA Learning Units.

Mark Scher
AIA Director of Continuing Education Programs and Products

QUESTIONS:

1. From a programming perspective, what are at least six corporate cul-ural and attitude shifts that are showing up at companies like Miller SQA and Silicon Graphics?

Answer 1a. ____________________
b. ____________________
c. ____________________
d. ____________________
e. ____________________
f. ____________________

2. How are a sensitivity to the environment and energy conservation reflected in the Miller SQA facility?

Answer 2. ____________________
____

3. How did the designers of the Prince Street project address indoor-air quality and other environmental issues?

Answer 3. ____________________
____
____

4. What is 3Coms approach to making the best use of its space?

Answer 4. ____________________
____
____

5. Describe the unique design elements that encourage cross-departmental teamwork for each of the projects that are profiled at length.

Answer 5a. ____________________
b. ____________________
c. ____________________
d. ____________________

6. Outline how the owners plan to measure benefits from the new design approaches in the Miller SQA and Prince Street facilities.

Answer 6. ____________________
____
____

For answers and self-report form, turn to page ***166***

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The American Architectural Foundation and The American Institute of Architects thank the McGRAW-HILL CONSTRUCTION INFORMATION GROUP for its sponsorship of Accent on Architecture 1997.

AIA/Architectural Record Continuing Education

Questions on page ***165***

Answers:

1 a. Retaining valued workers; **b.** Encouraging worker collaboration and solidarity; **c.** Dissolving traditional corporate hierarchies; **d.** Amenities that reflect youthful leadership; **e.** Sustainable environmental ideals; **f.** Facilities exemplify business identity.

2. Clerestory light and skylights reduce electrical and air-conditioning loads. Glazing orientation makes the most of winter light; the skylights themselves are treated with a low-emissivity coating to reduce heat gain. Only office areas are mechanically air-conditioned. Landscape swales and selected plantings filter stormwater runoff.

3. Prince Street tested materials for offgassing of VOCs, added anti-microbial agents to paints, carpets, floor sealers, wall coverings, ventilation-duct liners and condenser coils. Skylights and special diffusers reduce electrical loads. Windows are protected by sunshades. Also, the site design manages water runoff and uses low-maintenance plantings.

4. 3Com's architect designed a sufficiently flexible building so that space within it could be converted from office use to manufacturing or vice versa. If organizational change leaves the company with excess space, it can readily lease it.

5. a) *Prince Street:* The design, technical, and manufacturing departments are located for easy interaction. A circular design studio overlooks the manufacturing area; a sample lab is located below. **b)** *Miller SQA:* Office and production areas open to each other via a skylit "street" that has shared photocopy and conference areas. Interaction and team-building are encouraged with a central cafeteria, exercise center, and informal break areas. **c)** *3Com:* Staff interaction is promoted through open and daylit stairs and corridors, including convenient coffee bars, designed to facilitate communication. 3Com also houses a health club and training areas. **d)** *Northern Telecom:* Links engineering and manufacturing areas through a serpentine corridor. A skylit area for large and smal meetings is at the building's center.

6. a) *Prince Street:* Its facility reduced workman's compensation claims. The company expects product-quality improvement over the long run. **b)** *Miller SQA:* The owner is convinced that it will realize worker-productivity benefits from the project. But it is being monitored for the Federal Department of Energy to see if aspects of worker productivity, such as manufacturing errors and sick days, improve through the use of daylighting and other energy-saving strategies.

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AIA/CES Self-Report Form (FOR ARCHITECTURAL RECORD USE ONLY)

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Quality Level (QL) of this program: This article will give you a total of 2 LUs at Quality Level 2

Quality Level for this article is 2. (Refer to learning objectives on page 133). **Material resources used:** Journal articles.

THIS PROGRAM ADDRESSES ISSUES CONCERNING THE HEALTH, SAFETY, OR WELFARE OF THE PUBLIC.

I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

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COMPUTER DELINEATION AWARD

Are you a CAD-rendering wizard? An animation ace? A master of electronic modeling? RECORD seeks your best work.

To recognize the pioneering role architects and designers are taking in the development of computer imaging and presentation, ARCHITECTURAL RECORD is pleased to announce its fourth annual Computer Delineation Award. Architects and designers are invited to submit entries for original computer-generated drawings, renderings, or electronic models.

Judging: There are two divisions, one for images and one for animations. Entries will be judged on originality, clarity, elegance, and the extent to which the computer's unique abilities are used.

Sponsors:

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- ◆ Graphisoft
- ◆ Nemetschek ALLPLAN FT
- ◆ Bentley Systems Inc.
- ◆ Lightscape

Prizes: Three winners will be selected from each division and receive one choice from the following prizes offered by this year's sponsors: **Autodesk's** AEC Professional Suite, a $4,095 set of CAD tools, including AutoCAD R13c4a, AutoVision and Architectural Symbols • **Bentley Systems'** Microstation TriForma, a 3D modeling and 2D documentation program, value $5,850 • A 3-application software package from **Graphisoft:** ArchiCAD (object-oriented 2D/3D CAD software), PlotMaker, and Artlantis Render • **Lightscape's** Lightscape Visualization System, a realistic rendering and lighting package, a $2,995 value • **Nemetschek's** Allplan FT, fully integrated, object-oriented building-design software. Winning entries will be published in the June 1997 issue of ARCHITECTURAL RECORD and on the magazine's World-Wide Web site, and exhibited at the A/E/C Systems '97 computer exposition.

Rules: Projects delineated can be real, potential, or speculative, but must not have been previously published in a design or computer journal as either editorial or advertising. Images prepared solely for promotional use by manufacturers are also ineligible. An entry may be created on any platform, using any hardware or software. Submit hard-copy (maximum size 11 in. by 17 in.), 35mm slides, or VHS cassette (the latter only for animations). Submit single images, except where a suite of images is essential to describe the concept. Entries must be received by Wednesday, February 26, 1997. They remain property of owner, but may be republished in print and electronically. Entries must truly represent role of collaborators, firms, and clients. Include a stamped, self-addressed envelope for return of entry. Queries: 212/512-4256 (fax); jarussel@mcgraw-hill.com (e-mail).

To be judged, enclose $15 entry fee, and provide information requested below.

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Please tell us the hardware, software, and output devices you used. List by company and brand name (i.e., Autodesk AutoCAD 12, Apple Power Macintosh 6100)

Names of collaborators (firms or individuals) who should be credited

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Software 2
Software 3
Software 4

Hardware 1
Hardware 2
Hardware 3
Hardware 4

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The School of Architecture at Tulane University seeks applications for the position of Dean. Applicants should have demonstrated professional accomplishments in design, teaching, and administration. Send letter and c.v. to Errol Barron. Chair. Search Committee. 200 Gibson Hall. Tulane University. New Orleans. LA 70118. The position will remain open until a qualified candidate has been identified. Tulane University is an Equal Opportunity/Affirmative Action employer.

Architectural Engineering: The University of Wyoming, Department of Civil and Architectural Engineering, invites applications for two different tenure track faculty positions in the program in architectural engineering. One position is at the Assistant Professor rank and will require the applicant to teach and advise undergraduate students and develop an externally funded research program in his area of expertise and professional activities within the area of mechanical and electrical building systems design. Applicants for this position must possess a Ph. D. in engineering. Experience in industry and/or professional practice is desirable. Professional registration as an engineer is also highly desirable. This position is presently open and will be filled as soon as possible. The other position is at the Academic Professional or Instructor ranks and will require the applicant to teach and advise undergraduate students and perform creative endeavors and professional activities in architectural design and related building systems and materials. Applicants for this position should possess a Master of Architecture, NCARB registration and experience gained in professional practice. This position will be available starting in August 1997. Architectural Engineering at UW is one of 13 nationally accredited programs leading to a Bachelor of Science in Architectural Engineering. The Department of Civil and Architectural Engineering has a faculty of 22 and a current enrollment of over 350 undergraduates and 40 graduate students. The University of Wyoming is located in Laramie, Wyoming, a city of over 28,000 people in an intermountain basin. The University of Wyoming is an equal opportunity, affirmative action employer, qualified women and minority candidates are especially encouraged to apply. Send resume letter of application and the names and addresses o three references to: Dr. James O. Rose, Director of Architectural Engineering, P.O. Box 3295 Laramie, WY 82071-3295. Applications will be received until position(s) are filled, but to receive full consideration, your application should reach us for the first position by December 1, 1996.

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aculty Positions - Department of onstruction Technology Indiana University erdue University Inidanapolis (IUPUI). Applications and nominations are invited for the ositions listed below which begin with the 997-1998 academic year in the Department of onstruction Technology at Purdue School of ngineering and Technology at IUPUI. The epartment of Construction Technology has 80 majors and offers ABET accredited prorams in Architectural Technology (A.S.) Civil ngineering Technology (A.S.), and Construcon Technology (B.S.). The School of ngineering and Technology is one of the rgest of 18 academic units on the IUPUI ampus with 1,946 students. IUPUI Is a comrehensive, urban campus that enrolls more an 27,000 students and offers 174 academic. ograms. Chair Positions: The Chair's responbilities include administration of the epartmental academic programs and budget; culty recruitment, development and review; udent recruitment avoid and advising; teachg; working with other academic leaders at e, school and university level; and provide aison to local industry and advisory commites. Candidates should have good mmunication skills and be capable of develping positive relationships with both ademia and industry, prior administration perience, and a distinguished record of unirsity teaching and professional achievement equivalent industrial experience (minimum 3 year.s) Candidates should also be suitable appointment at the rank of associate or full ofessor. A masters or doctoral] degree in a sely related field such as architecture, civil gineering, or construction management is quired. Architectural or Professional. Engiering Registration (P.E,) is preferred.

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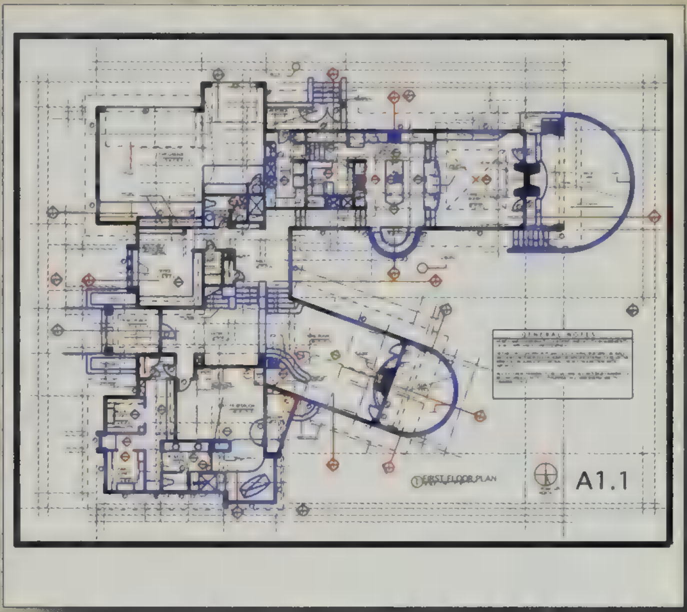

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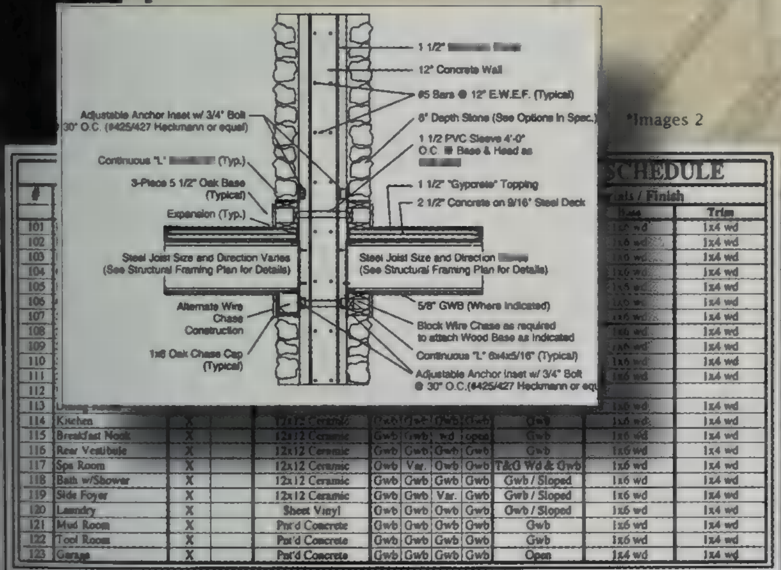

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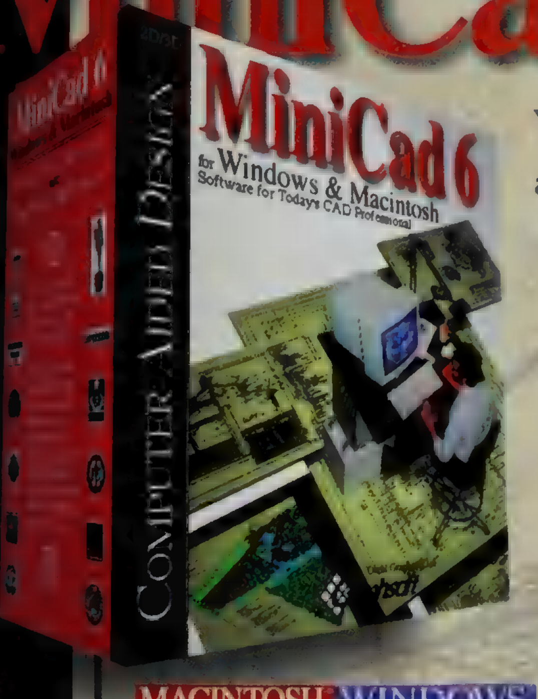

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